THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XVII. Copyright, 1885, JAMES R. OSGOOD & Co., Boston, Mass. No. 486.

APRIL 18, 1885.

Entered at the Post-Office at Boston as second-class matter.

CONTENTS.

SUMMARY: —
Fall of a Block of Houses in New York. — Proposed Bill to limit the Height of Buildings in certain Parts of New York City. — The Probable Effect on Insurance Companies of a Fire in the New York "Dry-Goods District." — The Proposed Boston Building Law. — Report of the Royal Commission on the Disposal of London Sewage. — The Missouri State Society of Architects. — The Responsibility of a Salaried Municipal Architect. — American Mail Device adopted in France 181
STROLLS ABOUT MEXICO. — V. 183
SANITARY PLUMBING. — XXXIII. 183
THE DELLA ROBBIAS. — IV. 185
THE ILLUSTRATIONS: —
Competitive Design for Stable. — Asbury M. E. Church, Philadelphia, Pa. — The Blake Monument, Mt. Auburn Cemetery, Cambridge, Mass. — Semi-Detached Houses, Pittsburgh, Pa. — The Parochial Church, Chihuahua, Mexico. 187
CONCRETE ROOFS AND ROOF COVERINGS. 188
MISTAKES IN PLUMBING. 189
COMMUNICATIONS: —
Kidder's Pocket-Book. — Centres for a Groined Vault. — Vandalism, Excusable or Inexcusable? 189
NOTES AND CLIPPINGS. 190

MR. CHARLES BUDDENSICK, of New York, whose murderous practices in regard to the plumbing of the houses which he sold to unsuspecting persons were once exposed with excellent effect in the *Sanitary Engineer*, has again been brought into public notice through the collapse and fall of a row of eight houses which he had been constructing with chips and shavings in place of bricks, and mud instead of mortar. Seventeen men are said to have been killed or wounded in the crash, and Mr. Buddensick, is, we are glad to say, held to answer for his deeds. The walls, as it appears, in addition to their other defects, had been laid in freezing weather, with ice still adhering to such bricks as the parsimony of the builder allowed him to use, and the thawing of the mass incident to the advancing season, followed by the washing out of the mud joints by a warm rain, brought about the effectual disintegration of the structure. One account suggests that Mr. Buddensick, who figures in the weekly reports as a very extensive builder, is the tool of a number of rich men who drive him to expedients which he knows to be criminal in order that their profits on the buildings which he erects may be increased. If this is so, we trust that the worst of his wealthy friends may happen to have been the owners of the houses which fell. The newspapers say that not a floor-beam or a stud remained unbroken in the entire block, so that the loss, on which there is of course no insurance, must be nearly total. As usual in such cases, an attempt is made to throw the blame on the inspector of buildings for the district, in place of the man who did the evil deed and profited by it; but it is proved that the inspector complained at headquarters of the character of the work, and unthinking prejudice should not be allowed to injure him unjustly.

AS our readers know, a bill was introduced this winter into the New York Legislature providing that the height of buildings in the dwelling-house quarter of the city of New York should be restricted to a certain limit, which was as a maximum, set at eighty feet from the sidewalk. The object of the bill was of course to prevent the erection of the great apartment-houses which tower in some cases two hundred feet above the pavement, and unquestionably shade the streets and houses north of them, and reduce, by comparison, the apparent size of the neighboring buildings. Whether this dwarfing effect would be appreciable in the selling price of the property next to such structures is more than doubtful, and the real grievance seems to be confined to the shadow cast by them, and as this seems to have been considered an insufficient basis for so arbitrary a restriction as the one proposed, the advocates of the bill have recently undertaken to fortify their position by the very doubtful device of attacking the apartment-houses themselves, and have produced evidence, in the shape of opinions by certain physicians, to show that the inhabitants of such buildings are liable to zymotic diseases from the probable opening of the joints of the drain-pipes in them, as well as to contagious disorders from the difficulty of isolating patients attacked with such maladies in them. As might have been expected, this attempt has brought out an overwhelming amount of rebutting testimony. Several of the best physicians in the city join in commending the substitution of elevators for stairs which forms one of their principal characteristics, and it is easily proved that however such buildings may shade the streets below them, those who live in them enjoy a greater amount of air and sunshine than the dwellers in the average city house. To say nothing of the advantage of being raised above the surrounding buildings, the planning of the best apartment-houses always secures outside light and air for bath-rooms and hallways, which in most city houses are dark and unventilated, while the interior space, between the front and rear chambers, which in houses is usually given up to a mass of unventilated closets, cupboards, bath-rooms, wash-basins and slop-sinks, and soon becomes the permanent abode of the insects and effluvia which are supposed to be indispensable to a city dwelling, is practically unknown in the first-class apartment-house, where economy of room, as well as better principles of planning, demand a distribution of these adjuncts to domestic life which greatly facilitates their maintenance in wholesome condition. Whether infectious diseases are likely to spread more rapidly in an apartment-house than in a block of houses we will not venture to say, but in the fire-proof buildings which should alone be constructed for the purpose there is little probability of contagion being communicated through the walls or floors, and the risk that any person leaving the patient's room will convey the infection to others by contact in the elevators and halls is no greater than that which every one encounters in riding in a public conveyance.

THE New York *Mail and Express* calls attention to the startling truth that a fire in the business district of that city approaching in extent the Boston fire of 1872, or the Chicago conflagration of 1871, might easily sweep away the entire capital and surplus of all the principal insurance companies in the country. According to the report of the Superintendent of Insurance, the aggregate capital aad surplus of all the companies doing business in the State of New York, one hundred and fifty-three in number, is a little over one hundred and seven million dollars. On this basis they carry risks amounting in New York State alone to very nearly ten thousand million dollars. Property in New York city, particularly in the business portions, is now very heavily insured, and the losses of the companies, which were less than one-fourth of the value of the property destroyed by the Chicago fire, and only about five-eighths of the total value in the Boston fire, would, in a fire in the New York dry-goods district, probably reach within a few hundredths of the entire value of the buildings and goods destroyed. The value of the goods and buildings in the dry-goods district is now estimated at five hundred million dollars, the risks on which are divided among nearly all the companies doing business in the State; and supposing the insured value to be nine-tenths of the actual value, it follows that a destructive conflagration extending over one-fourth of the dry-goods district, a much smaller area than that covered by the Boston fire, would extinguish every dollar of insurance capital and surplus in the State, with more than five million dollars deficit still remaining. Of course this is a matter for the merchants, rather than the insurance stockholders. The latter, if the value of their shares should be swept away, and the old companies dissolved, have only to subscribe new capital and start in business again, with better prospects than ever; but to the merchant, doing an extended business on limited capital, the general failure of the insurance companies to meet their obligations after a great fire would mean total ruin. All this seems obvious enough to any man of sense and prudence, and it is not creditable to the New York dry-goods merchants that, so far from protecting themselves against more than a possibility of ruin by adopting the precautions which the insurance companies, who have really less interest in them than they, point out as desirable, they have neglected and evaded them with such ingenuity and success that the underwriters are said to be thinking seriously of cancelling their policies in the district as a measure of necessary prudence.

THE new building law proposed for the city of Boston has met with delays which we hope will only serve to give the friends of good construction renewed strength and zeal, now that it is fairly before the Legislature, to urge its speedy passage. A few compromises have, in order to prevent its defeat, been made between the advocates of the bill and those who had some special reason for objecting to certain provisions, but the law retains all its best features, and will, if adopted, prove the means of saving incalculable loss and suffering to the people of Boston. By a curious coincidence, the consideration of the building-bill before the Legislative Committee began almost simultaneously with the commencement of a discussion among the merchants and property-owners of the city upon the means of securing adequate insurance upon their buildings and goods, on which the insurance companies now refuse to write policies at the full value. So serious has this question become that a public meeting was held, not long ago, to see what could be done, and the necessity has led to a movement for the formation of a mutual insurance company among the large real-estate owners of the city, who have already applied to the Legislature for incorporation. If this company should be formed, as is much to be desired, not more than one or two fires would be needed to show its members that their only chance for securing themselves against loss lay in enforcing upon each other some such rules for the safe construction and maintenance of buildings as the mutual mill insurance companies practise with such signal success; and in the promotion of this good work such a building law as that now proposed would be of the greatest service. As a rule, the great real-estate owners, relying on the sufficiency of their insurance, have been more reckless in their building methods, and more obstinate in their opposition to improved rules of construction, than any other part of the community, and a change in circumstances by which they were compelled to pay the penalty of their vicious habits of construction out of their own pockets should open their eyes so effectually to the advantages of good building laws as to send them in a body to the Massachusetts State House to promote the passage of the proposed bill, which their combined influence would readily carry through.

THE appearance of the report of the Royal Commission on the disposal of the sewage of London has been followed by the publication of a new edition of Mr. Bailey Denton's well-known book on sewage disposal, which is said by the *Builder* to contain a good deal of new and interesting matter. It is particularly noticeable that experience seems to have brought, as we should expect it would, better results in the way of utilizing sewage than had been obtained when the first edition of the book was written. Although Mr. Denton advocates and practises the employment of one acre of irrigation ground to about eleven hundred of population in the towns with whose sewage he deals, so that anything like farming is carried out under great disadvantages as compared with the perfect system of management in use at Pullman, the fields irrigated even with such excessive quantities of liquid as must come from Mr. Denton's proportion of land to sewage produce in many cases crops of sufficient value to pay a good interest on their cost. At Merthyr Tydfil, where one of Mr. Denton's most important works of sewage engineering was carried out, the profit for the year which the book quotes as an example was about twenty-five hundred dollars, after paying all the expenses. At Great Malvern the profit was eight hundred dollars, which was added to the poor fund; and at Abingdon the sewage-farm was rented by farmers for twenty-two dollars an acre. The mode of applying the sewage which Mr. Denton adopts is intermediate between the scientific method in use at Pullman and the indiscriminate flooding practised in the older sewage-farms. Although a flow nearly constant is to be provided for, he prevents it from saturating the growing vegetables by planting these on raised ridges. The sewage runs in furrows between the ridges, and soaks laterally in about the roots of the plants without covering their stalks and leaves with mud.

THE Missouri State Society of Architects has been constituted under the happiest auspices, the convention called for the purpose in St. Louis having been attended by about fifty members of the profession, many of them of much more than local reputation, from all parts of the State. Some of those most earnest in favoring the project of association were unavoidably absent from the convention, but sent their adhesion to the constitution, with authority to sign it for them, by letter, so that the new society was inaugurated with the names of fifty-six members on the roll. The constitution is in substance similar to that of all the best professional societies, providing for junior as well as regular membership, and establishing penalties for dishonorable or unprofessional conduct. The preliminary organization of the meeting was effected under the charge, first of Mr. Illsley, of St. Louis, as temporary chairman, and later under Mr. Tinsley, of Kansas City, as regular chairman of the convention. Mr. Arman, of St. Louis, was chosen secretary, both of the convention and of the permanent organization, and Messrs. Illsley and Herthel, of St. Louis, Carman and Van Brunt, of Kansas City, Hogg, of Hannibal, and Foley, of Springfield, were appointed as a committee on the constitution and by-laws, and were subsequently continued as the permanent committee on professional practice. The adoption of the constitution and by-laws presented by this committee, which completed the organization of the society, was followed by the election of officers in accordance with the rules, and Mr. Van Brunt, of Kansas City, was chosen President; Mr. Ramsey, of St. Louis, Vice President; Mr. T. B. Arman, of St. Louis, Secretary; Mr. Beattie, of St. Louis, Treasurer; and Messrs. McNamara, and McGrath, of St. Louis, and Cross, of Kansas City, as Trustees. The next convention of the society was appointed to be held in Kansas City on the second Tuesday in January next. We need not say that the sincere good wishes of the profession attend the establishment of the new society, and that the influence which it is in a position to exert for the good of American architects and architecture will not fail of appreciation.

ONE of the inquirers who seek legal information from *La Semaine des Constructeurs* puts a question which is answered exactly as it would be in this country or in England. The question is, whether there is any difference between the responsibility of an architect employed by a town at a salary, and that of one commissioned to carry out work at a percentage on the cost; and the answer is returned, that an architect employed by a town at a salary is not responsible for the consequences of any errors or defects in his work. A gross error may justify his immediate dismissal from his post, but beyond this he is not answerable for anything that may result from his ignorance or negligence. If damage or injury should fall upon innocent persons through his fault, they can recover compensation from his employers, but not from him, the fact of his engagement at a fixed salary carrying with it the presumption that his employers know all about his professional qualities, good and bad, and are prepared to assume the consequences of his defects as well as his merits. With the commissioned architect the case is very different. He is not, like the other, the legal servant of those who hire him, and subject to their whims and interference, but is free to prepare his plans according to his judgment, and is given, in most cases, complete control over the execution of the work. Moreover, he receives a compensation nearly proportionate to the importance of the structure carried on under his directions, and is rightfully held, in return for this, as well as for the wide discretion which the law allows him in performing his duties, to full responsibility for the consequences of failing to perform them honestly and skilfully.

THE device for receiving and delivering railway mails without stopping the trains which carry them, so familiar about our country railway stations, has just been introduced into France, where, according to the *Revue Industrielle*, it meets with distinguished approval. The apparatus for taking up mail-bags seems to be the same as with us. An electric signal, sounded by the passage of the train, notifies the post-office agent when the train arrives within half a mile of the station, and he then takes the mail-bag and hangs it on the projecting arm of a post standing beside the track. The clerks in the mail-car, before they reach the post, raise an iron arm hinged to the car, which lifts off the bag and swings it into the car. The delivery of the mail is somewhat less simple. The bag is hung out from the car, as it approaches the station, and is seized as it passes by a weighted lever, of cast iron, which lifts it from the hook on which it is suspended, and after a swing, tosses it into a net prepared to receive it.

STROLLS ABOUT MEXICO.—V.

CHIHUAHUA AND ITS GREAT CHURCH.

THE great church of the city of Chihuahua, *La Parróquia*, though commonly called the Cathedral, is really simply the parochial church, for, although Chihuahua is territorially the largest state in the republic of Mexico, its capital is not the seat of a bishop. The Chihuahua church is one of the types of the best class of Mexican ecclesiastical architecture, and the best is very good indeed. Unlike many of the notable churches of European cities, those of Mexico are generally so located as to display their good points to the best advantage. The principal cities of Mexico were laid out at the start on admirably conceived plans which have been closely followed. Nearly a century before the oldest of the New England coast towns were planted, to grow up along the straggling paths which formed the bases for their future expansion, there were cities in Mexico whose design showed all the regularity of a Philadelphia, and greater symmetry. This is probably due to the fact that the exploitation of the vast mineral wealth of the country called from the mother country many of the ablest engineers of the day, and their services were availed of in establishing the various cities of New Spain.

Therefore, as in most Mexican cities, the great church of Chihuahua occupies the finest site in the place, facing the Plaza Mayor, and occupying with its *atrio* one entire side of that square, which is the focus of the life of the town. This allows a free sight of the structure from nearly every place about it, its masses forming, from various points of view, highly interesting compositions. The lordly twin towers dominate the entire city, and may be seen for miles and miles away on the approach by railway from the north. The pretty central garden of the plaza, with its verdure, sparkling water, and bright flowers, its shrubbery and trees, and the rich architecture and noble proportions of the great church, form a combination of beauty and structural dignity which can be matched in few, if any, of our American cities.

Mr. W. H. Jackson of Denver, to whom the readers of the *American Architect* are indebted for the picture shown in the present number, has taken the best possible advantage of the opportunities afforded, in a way worthy of his reputation as the leading landscape photographer of America, being as deserving of the name of a true artist in his selection of subject and point of view, his adaptation of foreground to central feature, and his securing the best lighting to bring out contrasting shadows, as one working with the more laborious processes of pencil or brush.

The admirable proportions of the structure will be noted; the Romanesque basilica forming, as in most of the large churches of Mexico, the underlying fundamental idea. Note how the decoration is concentrated so as to produce the greatest possible effect, that of the main portal and the façade flanked by the absolutely plain surfaces of the massive walls that form the bases for the towers, which, increasing in elaboration as they rise, have the feeling of lightness and grace which suggests, in its aerial strivings, the spirit of the Gothic. Decoration is also concentrated about the side portals. These features are common to the class of churches of which this is a type. Another characteristic of most of the larger church structures of Mexico is the subordination of the dome to the towers, while in the minor churches, and also in some of the larger, as at Celaya, the dome is the dominant feature. But in the cathedral-like edifices the stress is usually laid on the towers. Unlike much of the later Renaissance work, the ornamentation of the Chihuahua church has not the over-floridness of design that imparts an effusive, unrestful feeling to the whole structure; while rich, it is chaste and reserved, giving the mass an air of elegant personality.

The church was built by a tax upon the products of the great mines of Santa Eulalia, twelve or fifteen miles out of the city. The discovery of these mines caused the foundation of the city. In those days Church and State were substantially identical, and the greater proportion of the public taxes went into the coffers of the former. The cost of the church is variously estimated at $600,000 to $800,000, at a time when labor was exceedingly cheap. This sum was raised by a tax of one *real*, or 12½ cents, on every *marco*, or half-pound of silver produced at Santa Eulalia, the church of which was built from the same source. The output of these mines in the one hundred and thirty years from 1703 to 1833 was about 43,000,000 *marcos*, or $344,000,000. The mines are now worked by an American company, I believe, but at present unprofitably, for the old leads are worked out; there is, of course, no knowing whether new veins may not some day be struck, with bonanzas as rich as the old ones.

The stone of which the church is built, as well as the greater part of Chihuahua, is of volcanic character, a porous *tufa* of a light yellowish-brown, carving easily and hardening with exposure. The plain surfaces of the walls are white-washed, contrasting with the warm tone of the carved stone-work. There are numerous bells in the towers, all pleasant-voiced except one of the largest, which gives forth a discordant clangor since in 1866 it was pierced by a cannon-ball fired by the Republican troops outside the city when it was held by the Imperial forces, who had a battery upon the church roof. The interior is impressive with its spaciousness and fine proportions, but is rather bare.

Chihuahua, is interesting as being the first typical Mexican city which one sees on entering our neighboring republic from the north, over the Mexican Central Railway. Although, when one has made the tour of Mexico it seems a rather dull and almost frontier-like place, it makes a most vivid impression when seen under the foregoing circumstances. After our flimsy western towns it has an air of striking solidity and finish. It has the appearance of a genuine capital, designed as an important centre. At the height of its mining prosperity, towards the end of the past century, its population is said to have been 60,000 to 80,000. The effect of the broad shady pleasure drives, or *paseos*, in the outskirts, with carved stone benches lining the way, and the water, crystal-clear, running freely through the streets, is most pleasant. There are many picturesque bits in the way of quaint chapels, carved house fronts, and arcaded courts with vines and flowers. The chapel, or *sanctuario*, of Our Lady of Guadalupe, a mile or so out of town, and approached by a beautiful avenue of cotton-woods, or *alamos*, is a fine example of its class of architecture; its beautiful dome, dazzlingly whitewashed, has a most brilliant effect against the clear blue sky. The bath of El Jordan, with a chapel tower reflected in the water above the other end of the long stone basin, is a sight well worth seeing, as is also the fine market-house of La Reforma. The new state palace, recently built, is an interesting example of contemporary Renaissance. This faces the plaza near the mint, where the patriot Hidalgo, the father of Mexican independence, was shot with his companions, Allende, Aldama and Jimenez, by the Spaniards, on July 30, 1811.

The railway has given Chihuahua a considerable impetus, and caused various business and manufacturing enterprises to be established there, with the prospect that the city may have a renewed prosperity and steady growth as a business and mining centre.

Sylvester Baxter.

SANITARY PLUMBING.—XXXIII.[1]

SHOWER-BATHS.

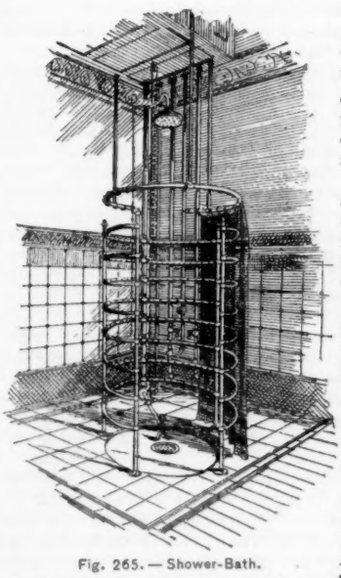


Fig. 265.—Shower-Bath.

FIGURE 265 represents a shower-bath. It stands free in the corner of the bathing-room, which has a dished or sunken floor to receive it. Jets are arranged on all sides, as well as above and below.

The shower-bath is an agreeable luxury for summer use, but for winter houses it is not so much to be recommended. The shock produced by sprays of cold water upon the body standing inactive is dangerous, and the use of warm water in the shower-bath in winter, without intelligent precautions, is also objectionable. For these reasons shower-baths are now seldom used in city houses in the North.

The usual form of shower-bath consists in a single rose-nozzle arranged overhead to throw perpendicular jets downwards. There are, however, a very great variety of forms and arrangements of shower-bath in use. Sometimes, in combination with the simple rose-nozzle above, a lower nozzle is provided with a rubber hose in such a manner that the lower jets may be applied in any desired direction. Sometimes the end of the bath-tub is raised high enough to enclose the shower-bath as in a niche. Lateral as well as perpendicular jets may be used within this niche, in which the bather may sit or stand. Sometimes the rose-nozzle is furnished with special "needle" outlets, throwing strong, sharp jets in addition to the drops from the

[1] Continued from page 293, No. 469.

sprinkler. To give varying pressure, the cistern is sometimes hung in such a manner that it may be raised or lowered at will by means of pulleys.

Figure 266 illustrates the manner in which the overflow passage of a bath-tub may become foul. Col. Waring, in his article on "*The Principles and Practice of House-Drainage*," in the November and December numbers of the *Century* for 1884, speaking of concealed overflow passages, says: "They are practically never reached by a strong flushing stream, and their walls accumulate filth and slime to a degree that would hardly be believed . . . . they are more often than any other part of the plumbing-work, except the urinal, the source of the offensive drain smell so often observed on first coming into a house from the fresh air. . . . It will perhaps be instructive to illustrate by a diagram the reason why the usual hidden overflow is so objectionable. . . . If we suppose the tube to be filled to the level of the overflow, and its waste-plug to be removed, the water will immediately rise in the overflow-pipe to very nearly its height in the tub. It is of course impregnated with the impurities of the water in the bath. Furthermore, the lighter particles of organic matter flowing through the waste will, some of them, rise by their levity into the overflow-pipe. The water rushes up into this pipe with much force, but it descends only very slowly as the level in the bath descends, so that at each operation there is a tendency to deposit adhesive matters to the walls of the pipe. What is so deposited decomposes and escapes, little by little, in a gaseous form, through the perforated screen, into the air of the room. The amount of these decomposing matters is somewhat increased, though probably not very much, by floating particles passing through the screen when the overflow is performing its legitimate function.

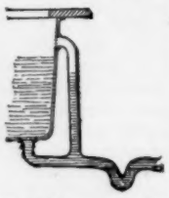


Fig. 266. — Bath-Tub with hidden Overflow-passage becoming foul.

[From the *Century Magazine* for Dec., 1884.]

"This is the simplest statement of the proposition, and this is perhaps the least objectionable form of hidden overflow. Where the waste-pipe is closed at the bottom of the overflow, by a plug or valve attached to a spindle rising through the overflow-pipe — a very favorite device with some plumbers — the difficulty is in every way aggravated, and the amount of fouled surface is much increased. The inherent defect here illustrated attaches to every overflow of this general character connected with any part of the plumbing-work. In the case of a bath-tub it may very easily be avoided, as shown in the next diagram."

Col. Waring then illustrates and explains the ordinary stand-pipe arrangement, and says: "Unfortunately such a substitute for the ordinary overflow is not applicable to wash-bowls as now made. It may be made available for pantry sinks if the pipe can be so placed in a corner as not to interfere with the proper use of the vessel. If its universal adoption for bath-tubs could be secured, a very widespread source of mild nuisance could be done away with. Fortunately it is far cheaper than any arrangement for which it is a substitute. It is one of its incidental uses that it enables us to get rid of the dirty chain attached to the ordinary bath-plug."

The size of the trap for bath-tubs should never exceed that of the outlet and waste-pipe. A one-and-one-half inch trap is large enough for any bath-tub or wash-basin. The proper size for traps and waste-pipe of different fixtures is a matter which is very little understood. This ignorance has its origin in the faulty construction of the outlets, which are always entirely too small. A very simple and self-evident rule is that: *No trap, except a water-closet trap, should be larger or smaller than the waste-pipe at its most contracted point, and no fixture outlet should be smaller (in its clear water-way) at any part than the trap.* In no other way can the pipes and traps be properly flushed, nor the fixtures emptied with the desired rapidity. Hence, since we find the best size for waste-pipes for all lavatories is one-and-one-fourth inch or one-and-one-half inch in inside diameter, except in certain cases hereafter to be referred to, no traps should be greater or smaller than this. Moreover, it is very important to bear in mind that the measure of a trap is the *diameter* of its inlet and outlet pipes *at their smallest part.* If we examine the drawings of the different traps in our chapter on this subject, we shall see that they are drawn to a substantially uniform scale, and that the scale adopted is *the smallest diameter of the inlet and outlet pipe.* This diameter is uniform in all the drawings, and we have thus a clear idea of the actual relative sizes of these traps. The usual practice is very different from this. Traps are arbitrarily measured without regard to their real discharging capacity, but generally from the diameter of the inlet-pipe at its upper end, which is in most cases much larger than the smallest part of the trap. Many traps are sold as one-and-one-half inch traps which are contracted at some point to seven-eighths of an inch or even five-eighths of an inch. The size of a trap, then, is evidently the size of its smallest part, since this part governs its capacity for discharge.

Guided by these principles we have the following rule: *The discharging capacity of the outlet of every fixture should be great enough to fill its waste-pipe "full-bore," and the size or capacity of the trap should equal that of the outlet.*

PANTRY SINKS.

Pantry sinks, like bath-tubs, may be classified in the same manner we have classifiedwash-basins, and here, again, the open stand-pipe overflow is by far the best and most convenient form. These sinks should be constructed of tinned and planished copper weighing from sixteen to twenty ounces to the square foot. Iron and earthenware sinks are made, but they are objectionable as exposing the dishes and glass-ware to greater danger of breakage. For this reason, also, cherry slabs are preferable to marble.

The waste-pipe should never exceed one-and-one-fourth or one-and one-half inches in diameter, and the outlet should have a capacity large enough to fill this pipe full-bore. The sink should be trapped with an unsiphonable trap of the size of the waste-pipe.

There are plumbers who still ignorantly insist that a pot-trap is suitable for sinks on account of the formation of grease. Let us examine the manner in which a pot-trap deals with this material. Does it collect the grease and preserve it in its body until such a time as it may become convenient to remove it, or does it in some way alter its chemical constitution, so as to deprive it of its power to clog the drains? It is evident upon the slightest reflection that it can do neither. It is not large enough to materially cool the grease nor to retain any considerable amount in its receiver. It could not intercept as much grease, even if it were completely stuffed up with it, as would pass through the sink of a large establishment, hotel or club-house in a day, or of a small house in a fortnight.

The outlet arm leaves the body of the trap very near its top; as near as the solder jointing will allow. Hence, since grease is lighter than water, it will rise to the top of the trap, and the first that collects there in any large quantity will necessarily obstruct the passage of the water. The trap can only retain in its body the small quantity of grease which would fill the corners remote from the outlet arm, as shown in Figure 267. The heavier matters carried into the trap along with the grease fall, on the other hand, to the bottom. These matters consist of bits of meat, bone and vegetable. They form a foul sediment on the bottom of the trap, and rapidly putrify. The force of the water is generally sufficient to keep a passageway open for itself for a considerable length of time. Hence, after the corners have become filled with the black and rotting mass, the grease will pass through this trap exactly as it would through an ordinary S-trap. Having no proper tools to unscrew the tightly-sticking clean-out cap, the owner, after vainly hammering at and disfiguring the brass-work with such unsuitable instrument as he can lay hands on, is obliged to send for the plumber.

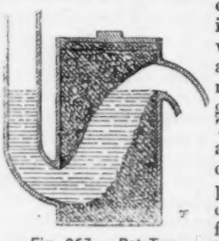


Fig. 267. — Pot-Trap under Sink.

In short it stands to reason, and is borne out in fact, that an ordinary pot-trap has really no merit whatever as a sink or grease trap. It is neither large enough to cool and retain all the grease, nor small enough to let it all pass. To cool the grease enough to harden it before it passes into the waste-pipes beyond the trap requires a large cesspool or regular grease-trap. In many cases it is better to dispose of the grease by sudden and powerful flushing. The best apparatus I know of for this purpose is the Dececo Flush-Pot, which is nothing more than a sinkage with strainer in the bottom of the sink, so arranged as to hold the waste-water until it may be discharged like a flush-tank, to scour the pipes and hurry away the grease in an irresistible torrent to the drains, its use presupposes care on the part of the servants. But when the flush-pot becomes more widely known its proper treatment will follow.

Many plumbers are very fond of the pot-trap, just as in old times they were fond of its near kindred, the foul D-trap, and, until lately, of the S-trap, because they were able to make them by hand in spare moments on a "rainy day." But in the long run what is best for the public is best for the plumber. Every additional complication of the plumbing, and everything which detracts from its convenience, safety and reliability, diminishes the amount of plumbing the public will allow in their houses, casts discredit on the art, and distrust on the plumber.

Pot-traps, like S-traps, are, however, now also made by machinery. Moreover, new conditions have originated new occupation for the plumbers' spare moments on "rainy days." The use of the flanged iron soil-pipe furnishes him with this desideratum. The lead rings for the joints are cast in the plumber's shop, as occasion demands, in small, simple moulds furnished by the manufacturers for the purpose. The plumber casts, in leisure moments, a stock of these rings large enough to last him through the busy seasons, and finds no reason to complain of the machine-making of the pot-trap. Ultimately it is probable that the S-trap, except for water-closets, and the pot-trap, machine as well as handmade, will disappear from good plumbing work altogether.

LAUNDRY-TUBS.

Laundry-tubs are made of wood, soapstone, galvanized-iron, enamelled-iron and porcelain. Wooden tubs should only be used in places where their use is constant; otherwise they shrink in the intervals of disuse, and become dirty and leaky. Soapstone sinks are most widely used, on account of economy and their general serviceableness.

The handsomest and best, as well as the most expensive, are the heavy porcelain trays. The waste-pipe should not be over one and one-half inches in diameter, and the outlet from each tray should be large enough to fill this pipe full-bore.

No pot-trap should ever be used.

THE DELLA ROBBIAS.[1] — IV.

From the Frieze of the Hospital at Pistoja, by Giovanni Della Robbia. (From *L'Art.*)

ONE more word about Andrea Della Robbia, ere we pass to his sons and successors.

He further innovated upon Luca's practice by using at times more than one plane in his reliefs. When this is very discreetly done, as, for instance, when in some of his smaller works he puts the Virgin and Child in high relief in the foreground, and a group of angels in lower relief above; that is to say, when there is no attempt at illusory, material perspective, but merely what we may call a sort of imaginative, ideal perspective, then indeed the art is pure and the result enchanting. But occasionally he essays the utmost pictorial diversity, as in a reredos representing the Nativity, which is now at South Kensington. Such efforts were far less justifiable in his glazed clay than they were in Ghiberti's bronze, which might be so much more delicately wrought. And the help he had from polychromy and from details that were merely painted, not modelled, did not suffice to win his battle.

Portraiture in enamelled clay he seems to have rarely attempted; when he desired its effects, he wisely left at least his faces uncolored and unglazed. And then he showed himself to be possessed of his full share of the current gift for realistic yet artistic likeness-making. Nothing could be more living, more full of character, than the heads in the "Meeting of St. Francis and St. Domenic," in the tympanum of the loggia of St. Paul's Hospital in Florence, and the work has also a tender beauty of sentiment and a noble simplicity of line which seem like an echo of Luca's mood.

It is not wonderful that the works attributed to Andrea Della Robbia should be so endless, or that their actual authorship should be so often undecipherable; for he lived to be ninety years old (dying in 1524), and had five sons, as well as numerous other followers, working in his atelier. Of these five sons, two became monks under the preaching of Savonarola, but probably did not quite abandon the practice of their craft. Another, named Luca, journeyed to Rome and is known to have laid in the Vatican many enamelled pavements, of which but the scantiest traces now exist. Among them was the flooring of the loggie, executed under Raphael's direction and after designs from his hand or his scholars'. But these pavements and certain vases, etc., which are believed to be Luca's, are merely painted, not modelled in relief, and so our authors with justice call him a potter, not a sculptor like his brethren.

Girolamo Della Robbia's name is chiefly identified with his work in Paris, whither we shall follow him in a moment. But the greatest sculptor among Andrea's sons was Giovanni — the greatest and most famous, though he died but four years later than his father, at the age of sixty, which may be counted young for one of these patriarchal Della Robbias. Many of his works are signed, an innovation which doubtless proves that the enamelling process was no longer a family secret, that it was now found expedient to give a "Della Robbia" some certificate of authenticity.

Messrs. Molinier and Cavallucci believe that they can trace a gradual but radical change of style in Giovanni's work. In the first period of his life he was entirely under his father's influence, that is, under the transmitted influence of Luca. Nothing therefore need be said, I think, of his earlier productions, for which a beautiful fountain in the sacristy of the Florentine Cathedral may serve as a type — a fountain which, as we might expect, is often attributed to Andrea, and even to Luca himself.

But in his second period Giovanni breaks with the family traditions, with those traditions of plastic simplicity and sweet Christian sentiment which had already persisted so marvellously long, embalmed as it were in the family process. The work of this period varies much, Giovanni's desire for independent expression leading him now to success and again to failure. Great haste is sometimes evident, as, for example, in the admixture of merely painted motives with those that are enamelled. Often the conception is cold and constrained, and the full polychromy, which is characteristic of Giovanni's later period, adds a touch of confusion instead of clearness. As a striking example of this period I may note a great polychrome tabernacle which stands in the Via Nazionale in Florence, but is better to be appreciated, perhaps, in the delicate etching that forms the frontispiece to Messrs. Molinier and Cavallucci's book than in its own form, since it is almost concealed by barriers of wire netting and grimy glass.

The central relief shows a Madonna and Child, with saints on either hand, and above, angels bearing a crown. But this relief is no longer of paramount importance: is almost crushed by the elaborateness of the borders. The inner border contains, below, life-size figures which are neither quite combined with, nor quite disassociated from the middle group; above these it shows half-lengths of angels, and the God-Father bends from the crown of the arch. Outside again is a second border with statuettes and floral motives and heads of ecclesiastics in the most prominent possible relief. The whole effect, florid and overladen, cannot be called successful, whether we judge it from a strictly sculptural or from a decorative point of view. There is no clearness, no unity in the conception, and but little artistic feeling in the execution or in the application of the color. And the lack of coherence is increased by the suppression of architectural factors. We realize the errors of its treatment when we compare this tabernacle on the one hand with those where Andrea Della Robbia sets a well-composed relief in a purely architectural framework, or on the other hand with those of Gothic origin, which are nearly akin to it in scheme, yet in the borders of which the artist always supports and unites his figures by the help of architectural motives.

But Giovanni gradually worked himself free from his period of embarrassment and confusion, and showed himself finally as an artist consummately clear in conception and single-eyed in aim, though an artist of a very different stamp from the previous Della Robbias. That is, we may affirm as much if he really was the author of the famous frieze on the Ceppo Hospital at Pistoja. No documents exist which confirm or deny the fact directly. All we can say is that popular tradition assigns the work to the Della Robbias, and that Giovanni was certainly in Pistoja in the year 1525, while the foundations of the hospital were laid in 1519, and the date 1525 occurs on one of the spandrel medallions, and again on the corner of the building itself. Lübke and many other writers speak of Andrea as its projector, a manifest impossibility when we collate our dates; but others go so far as to deny that any Della Robbia should be given the credit. It seems impossible, however, that so vast an undertaking should have been so successfully carried out elsewhere than in the atelier of our great dynasty of enamellers. Nor does it seem as though Giovanni could just at this time have been in Pistoja for any other purpose. Messrs. Molinier and Cavallucci, after careful research, deem Giovanni's authorship all but certain, granting, of course, that he must have been largely helped in the matter of execution.

The front of the hospital consists of a deep recessed loggia or porch, scarcely raised above the level of the street, and enclosed by a row of slender columns supporting wide, round arches, in each spandrel being set a large circular enamelled medallion. Above these, along the whole façade, runs a frieze of almost life-size figures, which is divided into six compartments by pairs of pilasters, very slight in projection, between each pair standing a single figure in high relief, emblematic of one of the cardinal virtues. These figures are idealistically treated, and though we may find in them some slight touch of self-consciousness, yet they have much dignity and feeling, showing once again, I think, the perennial influence of Luca. It is not in them, however, nor in the spandrel medallions — which are evidently scholars' work and good only in their borders of heavy fruit and foliage, but in the main reliefs of the frieze itself, that our interest centres. And here there is indeed no trace of Luca, unless we see it in the strictly legitimate use of a single plane of relief. Luca's grace of line, his feeling for "style" in composition, his idealism in sentiment — all these have disappeared in favor of the most direct and simple realism. If we look for pure plastic beauty, we

[1] Continued from page 175, No. 485.

shall find it only in one or two isolated figures. But if we look for an unflinching portrayal of individual truth, then indeed we have come to the right place. The theme is the Seven Acts of Mercy, personified by the ministrations of ecclesiastics to the sick and needy, a subject in which realism certainly had a sympathetic field prepared for it. The simple, unadorned truthfulness of its expression can hardly be described, and the diverse and marvellously expressive figures strike one as being the directest portraiture. The realistic effect is heightened, moreover, by the use of full polychromy in all portions save those which represent flesh, and just as much by the very fact that these are left in the unglazed clay which comes very near to the hue of Nature, and permits a very complete and incisive kind of execution. It is indeed a wonderful piece of work; wonderful not alone or chiefly in the triumphant use of the difficult material, but still more in the way an unadulterated, almost homely realism in conception has been joined to a purely sculpturesque way of treating the oft-misunderstood and much-abused relief.

When we consider all these qualities, and remember, too, that no decorative accessories whatever are introduced to assist the effect of the figures, but that the dividing pilasters are extremely simple and inconspicuous, and that the reliefs are framed above and below by mouldings so severe as to be actually bald; and when we think of Giovanni Della Robbia's other works, we do not marvel that his authorship of this has seemed to many critics doubtful. Nor does later work of his exist, to help us read the riddle; he must have died even ere this one was completed.

Messrs. Molinier and Cavallucci think that the implied total revolution in his art was a thing to be expected, was but an inevitable yielding to the influences of his time; but to me such an opinion seems hardly borne out by history. It is true that the spirit which Luca personified had long been extinct, and that some radical change of aim and manner might long since have been looked for in his successors. It is true, also, that all through the fifteenth century those who came after Luca, Ghiberti and Donatello had most often followed Donatello, had very often showed an ultra-realistic tendency. But this period, too, had passed away; Mazzano, who in his melodramatic groups of unglazed terra-cotta had carried a corrupt realism to its utmost possible limit — very far outside the limits of good art — was indeed a contemporary of Giovanni Della Robbia. But another contemporary was Andrea Sansovino, and he, not by any means any Mazzano, really typifies the tendency of Italian art in the first quarter of the sixteenth century. With Andrea Sansovino the later idealism of the Renaissance found its most perfect expression — that idealism which no longer, like the idealism of Ghiberti's day, merely drew inspiration from the antique love of beauty, but deliberately based itself on the antique in aim and manner, thus returning with its enormously increased knowledge and technical skill to the standpoint of Niccolo Pisano, three centuries before. With Andrea Sansovino the antique form and perhaps the antique sculpturesque feeling were more perfectly reproduced than they have ever been, before or since, while the decline marked by the substitution of alien classic for national Christian subject-matter (and typified by Jacopo, the younger Sansovino) was not yet strongly perceptible.

If Luca's Madonnas were out of date, so too were the realistic portrait-statues which Donatello had baptized with imaginative names. Even Benvenuto Cellini, who of all sixteenth-century sculptors (except the sculptor of our frieze) showed the strongest realistic impulse, did not show it by any means unmixed with a classicizing imitativeness. Even his "Perseus" has no affinity with the simple, unadulterated realism we see at Pistoja; nor, on the other hand, has the frieze any least fellowship with such work as Mazzano's. Its realism is not of a decadent, exaggerated, offensively self-conscious sort, but purely natural, almost *naïf*, yet self-restrained; in a word, admirably artistic where Mazzano's is brutally theatric. It would not have surprised us in the least had we here found Giovanni Della Robbia throwing off the family traditions to become a classicizing idealist; for in fact we can distinctly trace such a tendency in many works of his middle period; in the large saints' figures of Santa Maria at Ripa, for example, and in certain medallions that are preserved in Florence and at South Kensington. But it does surprise us, and all the more after this last recollection, to find him turning about once more and becoming so downright, uncompromising — I had almost said prosaic — a realist as the artist of Pistoja. But, after all, if the frieze does not show the "spirit of the age," but, as I cannot but think, a spirit in distinct contrast therewith, there is less difficulty in accepting Giovanni's authorship than in finding another father for it — a father whose realism would surprise us just as much, and whose artistic skill would be an added marvel. To no other known man can it with so much probability be assigned. And it seems quite impossible that it should have been the work of a sculptor otherwise unknown.

From the Frieze of the Hospital at Pistoja, by Giovanni Della Robbia. (From *L'Art.*)

From the Frieze of the Hospital at Pistoja, by Giovanni Della Robbia. (From *L'Art.*)

Long before as well as after Giovanni's death, the art of enamelling terra-cotta statuary was very widespread in Italy: so widespread and so diverse in its manifestations that it is utterly impossible to criticise more definitely than by saying, this is a good work and this is a bad one. Who may have been the author of the one or of the other can scarcely ever be ascertained, though we are naturally inclined to give the best to the Della Robbia atelier. Those works in unbroken white, which were so long called Luca's, really belong almost always to this latest time. And now the practice became common of copying former works or of reproducing them by means of casts, devices very alien to the spirit of those good old days when each of Luca's and of Andrea's works was a fresh and individual creation. Now, too, the enamellers began to copy the bronze or

COPYRIGHTED 1885 JAMES R. OSGOOD & CO

Asbury M. E. Church
Philadelphia, Pa.
Mr. John Ord, Archt.

PLAN of GROUND FLOOR

PLAN of CHURCH FLOOR

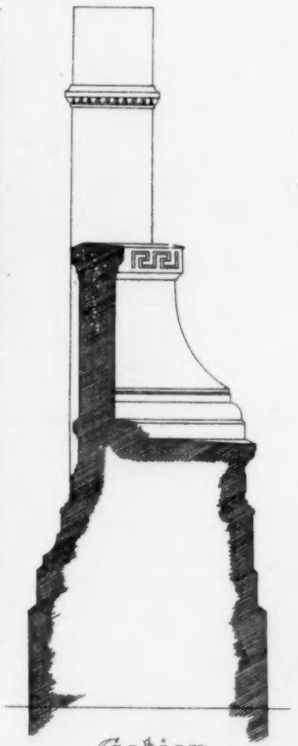
E. Elliot Adams, del.

HELIOTYPE PRINTING CO BOSTON

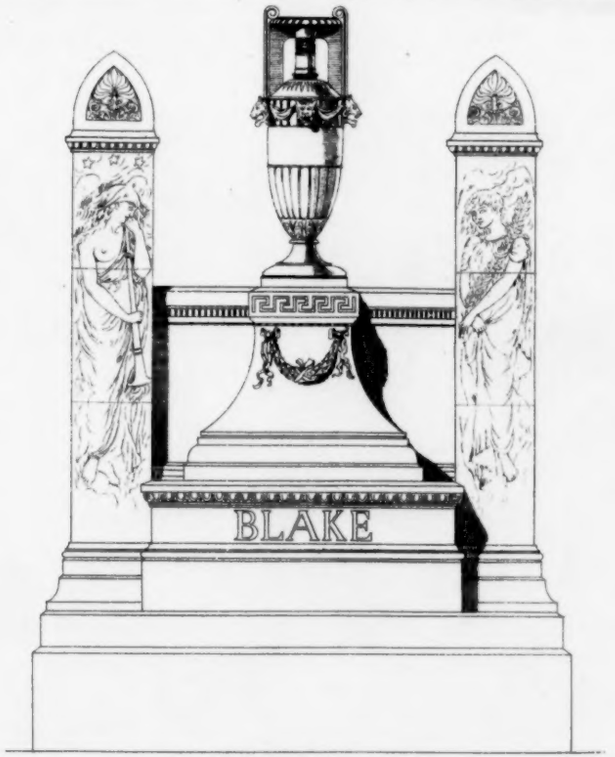
No. 456 American Architect and Building News, Apr. 13 1885

COPYRIGHTED, 1885, JAMES R. OSGOOD & CO.

"Night"
Sketched from Plaster Cast.

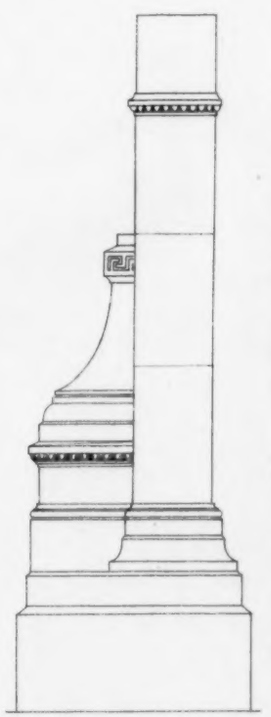


Section



Front Elevation

Scale of 1 1 2 3 4 5 6 7 8 9 10 11 12 Feet.



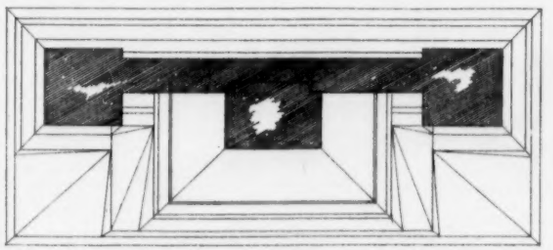
Side Elevation

"Morning"
Sketched from Plaster Cast

Blake Monument
at
Mount Auburn Cemetery

Messrs. Van Brunt & Howe
Architects

Ref. by Prescott Evans and Tombs. Boston, Mass.



Plan

HELIOTYPE PRINTING CO. BOSTON.

COPYRIGHTED 1885 JAMES R. OSGOOD & CO

Semi-detached Houses
W. L. Van Kirk Esq.
Pittsburgh Pa.

First Story Plan.

HELIOTYPE PRINTING CO. BOSTON

COPYRIGHTED, 1885 JAMES R. OSGOOD & CO

American Architect Competition 1884

A County Stable

Submitted by

"Hay-Foot-Straw-Foot."

HELIOTYPE PRINTING CO. BOSTON

marble successes of other sculptors, and even to imitate in their reliefs scenes which the painter had made beautiful on canvas. And, as we know positively in one or two cases, and may assume in very many more, other sculptors now modelled their clay and then sent it to the Della Robbias to be colored and enamelled. Is it wonderful that we have no longer a clue to guide us in our nomenclature, or wonderful that what was once so pure and beautiful an art should now have declined into a mere prolific trade; sometimes into a process which does not even deserve the name of a respectable handicraft?

After Giovanni Della Robbia's death, the only real point of interest is to be found in France. Thither went, probably in the year 1527, his brother Girolamo, or, to give the French version of his name, Jerome. He too, like so many other Italians before and after — like Lionardo and Andrea del Sarto, and Benvenuto Cellini, and Rosso, and Primaticcio — was tempted away from the distracted peninsula by the security and the munificent royal patronage of Paris. Indeed it seems probable that he was directly invited by Francis the First, as immediately upon his arrival an important work was committed to his hands. This was nothing less than the construction and adornment of that famous Château du Bois de Boulogne (commonly and most mysteriously called *de Madrid*[1]), which was one of the wonders of its age, but which to us, alas, is only known by tradition and by Du Cerceau's drawings. Nothing of the sort had been built before, and indeed nothing of the sort has been built again.

The north façade, which our authors show after Du Cerceau, was twenty-four metres in length, and was broken into three divisions, separated from each other and flanked at the corners of the building by narrow, projecting bays, which were quite plain save for small square windows and the string-courses which bound the whole structure together. The richness of the main portions was thus thrown into full relief, and very rich they look to be. Their two lower stories show arcades with round arches, and above are two more stories, where the rectangular windows are framed, apparently, by pilasters and elaborate mouldings.

Every one knows the splendid skill shown by French Renaissance architects, ere the advent of François Mansart with his innovations, in designing their great groups of high, pointed roofs and lofty chimneys, whereby they proved themselves, I should say, the masters of the world in the art of roofing secular constructions. It is therefore no slight praise to say that even for its own generation the roofing of Madrid seems peculiarly fine. It is impossible to say how much of the strictly architectural credit of the structure should be given to Jerome Della Robbia, and how much to the now forgotten "master-mason," Pierre Godier, whose name is associated with his in the commission. Nor is it easy to decide how much enamelled terra-cotta was used in the decoration; Du Cerceau's text helping but little to elucidate his prints. He leads us to believe that the fine interior features, the pilasters and great chimneypieces which he drew, were in terra-cotta, and of the façade he says: "The largest part of the enrichment of the first and second stories outside is of terra-cotta. The mass is very brilliant [*esclatante*] to the eye . . . all the more that even the chimneys and dormers are filled with work." But this last phrase does not mean terra-cotta work. For Jerome was not allowed to finish Madrid in peace. His name disappeared from the records in 1553, and he himself, according to Vasari, then returned to Florence. His brother Luca, whom he had called from Rome to help him, had already, it would seem, ended his life in Paris. At the death of Francis I, in fact, Philibert Delorme had been made *Surintendant des Batiments*, and his own book[2] tells us of his disapproval of the decorative system adopted for Madrid, and of the care he took not to continue it in the upper stories. In 1559, Primaticcio succeeded Delorme, and called in to aid him, at Madrid, the Limoges enameller, Pierre Courtois. We know that at least the decorations of the chimneys were executed by Courtois in his own material, and some remains of them are still to be seen at the Hôtel Cluny: great colored figures on a blue background, enamelled on copper and curiously hammered up from the back, so that they stand out in considerable relief. This last fact may tend to prove that Courtois strove to bring his own enamels into harmony with those of terra-cotta which Della Robbia had placed below. In 1560 Jerome returned once more to Paris, and when he died, six years later, the Château stood entire. But we do not know what part he may have taken in its completion. It is only certain that he stood well at court, being given commissions of other kinds, and being lodged in one of the royal palaces.

Returning now to the Château, we find that the spandrels of the arcades were filled by circular medallions, and that elaborate friezes, richer in the first story than in the second, ran above them. The medallions were undoubtedly of terra-cotta, but about the other details there is more question. Vasari tells us that Jerome worked in stone for the decoration of the building, but from the way in which contemporary and later writers (always speaking casually, alas! and never descriptively) dwell upon the effect of the enamelled color, it seems to me as though more parts than the medallions must have been wrought with it. Nothing exists to-day which can with any likelihood be considered as having belonged to Jerome's work upon the Château save four medallions colored in white and dull red, now in the Cluny Museum, and a few others, colored in white and violet, which are in the collection at Sèvres.

The other commissions which Jerome received during his second stay in Paris included terra-cotta decorations for the palace at Fontainebleau, which have long since perished; also, two marble figures, lost again, for the monument which was to hold the heart of Francis II, at Orleans; and finally, a figure for the mausoleum which Catherine de Medici had planned for Henry II. The queen desired that even during her lifetime her figure as lying in death should be placed beside her husband's on the tomb. The general design of the monument was Primaticcio's, and the execution was distributed among a number of sculptors, to Jerome Della Robbia's share falling the preparation of Catherine's effigy. It is certain that he received for it a payment on account, but eventually both the recumbent statutes were executed by Germain Pilon, doubtless because of Jerome's death ere his had been completed. An unfinished marble figure of the dead Catherine still exists, which in former years received different appelations, and was often supposed to be Germain Pilon's first essay for his work. But to-day, it is generally conceded that it is in truth the figure which Jerome Della Robbia seems to have left incomplete at his demise. Those among my readers to whom the Museum of the Ecole des Beaux-Arts in Paris is a familiar memory, will doubtless recollect a strange, ghastly, realistic-looking nude figure which is in truth an imaginative picture of Catherine as a corpse, designed many years before she left the world. It is interesting in itself — doubly interesting as being the last work of the last artist of what Messrs. Molinier and Cavallucci not inaptly call the great dynasty of the Della Robbias.

But, I may add, the family by no means died out with the death of its art. Jerome's many children all married well in France, and his descendants find occasional mention in history. One of his daughters became the wife of Ascanio Di Mari, goldsmith to the king, recognized even by the irascible Cellini himself as being the best among his pupils. Looking at the genealogical tree our authors furnish we find, moreover, that in Italy also honors were in store for Della Robbias. For example, one Luigi, a descendant in the fourth generation of Andrea's brother Simone, was the father of no less than three bishops. His sister married into the noble family of the Viviani, and to-day her descendants are proud to recognize her origin by calling themselves the Marquis Viviani Della Robbia. At least one of the present generation in this branch has, I believe, shown himself to be an intelligent admirer of his forefathers' art.

[1] It seems as though, of all places in the world, Madrid must have been the last, except Pavia, which Francis the First would desire to remember or to honor. And indeed the name stands always Château de Boulogne in his official documents. Yet "Madrid" soon became the common appelation, as we see from Du Cerceau's drawings. Some writers believe it must have been given on account of a supposed resemblance between Della Robbia's decoration and the *azuleios* or colored enamelled tiles that were characteristic of certain parts of Spain.

[2] *Treatise on Architecture.*

[In a former chapter I carelessly attributed one of the Florentine baptistery-doors to Giovanni Pisano. It is in truth the work of Andrea Pisano, the greatest among Giovanni's scholars, and the greatest of all the Gothic sculptors of Tuscany.]

M. G. van Rensselaer.

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

COMPETITIVE DESIGN FOR STABLE, SUBMITTED BY "*Hay-Foot-Straw-Foot.*"

IN designing this stable an endeavor has been made to give it as "barny" an appearance as possible, and combine long lines with simplicity. The man's room is provided on the main floor so as to make his quarters comfortable as well as convenient. On the side of his room next the carriage-house is a glass case for the best harness. This has sliding doors on either side, so that the harness may be put in on one side and taken out from the other, thus overcoming unneedful carrying. This case is placed as far as possible from the stalls, so that the good harness is kept from the effects of ammonia. A generous closet is provided, to be used as a store-room for blankets and stable trappings. The recess for the sleigh is so arranged that the sleigh is out of the way during the summer. For the convenience of the man an earth-closet is provided. The stairs run from the stalls, so that the man may conveniently go from the horses to the loft, and in this way the carriage-room is not broken by the stairs. It is best to have the manure-pit entirely without the stable, and it has been arranged in this way, so as to keep all odors arising from the pit out of the stable. The stable is to be stained with oil of creosote, which costs 30 cents per gallon.

Mr. Ladd, of Boston, whose estimate, of $1.50 per square foot, I take, can build this stable for $1,400.

COMPETITIVE DESIGN FOR STABLE, SUBMITTED BY "*Asmodeus.*"

[See Illustrations in *American Architect*, No. 485.]

THE foundations of all inside and outside walls to be of brick. The stables and yards to be paved with bricks grouted and laid to current, and provided with iron traps, where shown on plan, connected with glazed stoneware drain-pipes, jointed in cement. Provide hopper-closet apparatus for water-closet, and connect with drains. Provide iron cistern, and lay on water to same and to closet and greenhouse, with all the necessary fittings. The manure-pit to be built of brick and to be six feet deep. Provide and fit one stone chimney-cap.

Studs to be 2″ x 4″, planed and chamfered joists (both floors) in carriage-room and over stable, 2″ x 12″; other joists, 2″ x 8″; sills, 3″ x 7″; plate, 3″ x 4″; rafters and collars, 2″ x 6″. All walls and roof to be lined outside with spruce or hemlock boarding, and all ceilings in man's rooms and harness-room, and inside walls (except in carriage-room), to be lined with seven-eighths inch second pine matched sheathing. All floors to be laid with one and one-eighth inch matched flooring. The clapboarding to be second pine. Roof-shingles spruce; vertical shingles pine, to be furred out as shown. The stable is ventilated by fourteen-inch matched-enclosed shaft, extending from ceiling to ventilator in roof. Doors in carriage-room and stable to be two and one-half inches thick, made to slide complete.

Stairs and other parts drawn to enlarged scale to be built accordingly. Cases in harness-room to have sliding-doors.

The price obtained from a responsible builder, of Springfield, Mass., for constructing the above barn complete, in accordance with accompanying plans, is $1,523.

ASBURY M. E. CHURCH, PHILADELPHIA, PA. MR. JOHN ORD, ARCHITECT, PHILADELPHIA, PA.

This building is now approaching completion. General facing of walls is Trenton brownstone, with finals of Bedford, Ind., limestone. Finish, inside, of yellow-pine; the benches being of ash, stained. Ceiling, thirty-six feet high in the clear, is plastered on top of principal rafters which have curved braces brought well down on the walls and rest on stone corbels. Transept arches are kept below the level of general wall-head. Windows filled with stained glass, — mostly Memorial windows. Heated by three thirty-six inch hot-air furnaces in cellar, so arranged as to draw the air required for combustion from the floors of rooms. Lecture-room and class-rooms on ground floor; and main audience-room up-stairs. The cost of the building, finished complete, ready for occupancy, will probably not exceed $50,000. Seating capacity, 900. Some slight reductions were made on cost of exterior, as shown in this perspective.

THE BLAKE MONUMENT, MT. AUBURN CEMETERY, CAMBRIDGE, MASS. MESSRS. VAN BRUNT & HOWE, ARCHITECTS, BOSTON, MASS.

SEMI-DETACHED HOUSES FOR W. L. VAN KIRK, ESQ., PITTSBURGH, PA. MESSRS. ROSSITER & WRIGHT, ARCHITECTS, NEW YORK, N. Y.

THE PAROCHIAL CHURCH, CHIHUAHUA, MEXICO.

For description see article elsewhere in this issue.

CONCRETE ROOFS AND ROOF COVERINGS.

In treating of concrete as a material for roof and roof coverings, it may be as well to limit the subject at once to those instances in which the employment of such a material would be of practical advantage. For the ordinary pitched roof of the general run of buildings we are not likely to see concrete much employed, except in the form of concrete tiles or slabs, on account of its great weight and the consequent expense of both the roof itself and its supports. We may also, I think, lay it down as a rule that concrete, if employed, would be not only used as a covering, but would itself form part of the construction of the roof. The following appear to me to be cases in which concrete may be advantageously employed in roofs. (1) For flat roofs; (2) for all kinds of fire-proof roofs; (3) for all kinds of domes and vaults; (4) for the roofs of all buildings of a monumental character, in which great strength or durability is required.

As an example of the first kind, viz.: flat roofs, I may mention one which has come under my notice as district surveyor in my district. At Hackney, where Mr. H. M. Millar, builder, is erecting some small houses in which several ingenious applications of concrete are adopted, he forms part of the flat roof as follows:—

1. The top story is covered by joists 8″ x 3″ at one end, and 3″ x 3″ at the other, made by cutting through an 11″ x 3″ joist diagonally, so as to get fall without waste, placed about twelve inches apart; these are covered by boarding in two-and-one-half inches widths, and three-fourths inches thick, each board being one-fourth inch distant from the next one (a very important point, as if laid close they swell with the wet, spring up and break the roof). On this as centring is added two inches of Portland cement concrete as a roof covering; the concrete is made of brick rubbish ground to powder in a mill, and with one-quarter in bulk of Portland cement added, thoroughly mixed dry, and then wetted and brought to the consistency of a thick paste. It is laid on the boarding, smoothed out with a trowel, and the roof is complete. A coat of tar is sometimes added, but it is not absolutely necessary. Mr. Millar says he has had about eight years' experience with roofs of this kind, has made about fifty, and has never had a failure except in the case of some which were done during a frost. More frequently the centring boards are put under the joists, embedding them, and thus making the joists practically fire-proof. I believe this is a method frequently adopted in the roofs of artisans' dwellings in the East End and elsewhere. It is quite obvious that in buildings of greater importance the same system might be adopted with iron joists instead of wood, or any of the numerous methods in use for the construction of fire-proof floors in concrete would come in also with slight variation as useful flat roofs, and no doubt many of the members present could give examples of such application.

2. The same reasons that make concrete available for fire-proof floors make it also available for fire-proof roofs of all kinds. I may give an example on the black-board. Suppose a fire-proof roof be required, and it is determined to cover the building with a roof on the mansard principle. Let all the principals be formed of iron trusses, the front and back walls of the attic story being framed of suitable iron uprights, instead of the usual wooden quarterings, and let the common rafters be of iron; put boarding on each side of these rafters and quarterings to form a mould, and fill in with fire-proof concrete, so arranged as to cover and protect the iron, and you then have a complete fire-proof roof without thrust on the walls, which is neutralized by the trusses. I have noticed in houses in the course of construction in Paris, that all the roof framing and common rafters are frequently of iron, and it would be interesting if our secretary or some other gentleman equally well acquainted with French construction could tell us in the discussion if this iron framework ever has a concrete filling-in like the fire-proof floors which are so general in Paris; and also some member may possibly be able to inform us if this mode of construction has been adopted in America.

3. On the subject of domes and vaults I think I have little to add to what I have already said in the former papers above alluded to, so that I will not take up the time of the meeting by going into it, except to allude to the immense importance of the subject, and its bearing upon the whole question of style and construction in architecture. To realize this, one has only to turn to a work like M. Viollet-le-Duc's dictionary, and glance at the chapter on vaults in the article on construction, where he shows in that lucid analytical style which is peculiarly his own, how the whole fabric of the Gothic cathedral rose up step by step from the repeated attempts, after many failures, to cover in those large buildings in a fire-proof manner with stone vaulting. We know how the Gothic architects ultimately succeeded by an ingenious collection of the various thrusts of the vaults in given points, and opposing these by buttresses. Wonderfully ingenious and skillful as this method is, I think it must be admitted that it carries with it the elements of unrest, and comparatively early dissolution. In most instances, if one pier or one buttress gives way, the rest will follow at no distant date, like houses built of cards. It is to be doubted if buildings on this system, unless constantly watched and repaired, will ever attain the ages of those of Egypt and Greece, constructed on the principle of the upright support and horizontal lintel; and is it not quite possible that if the ingenious and practical designers of the Middle Ages had had at their disposal iron in large bulk, worked with the ease and facility that it is in modern times, and a strong and plastic material like Portland cement concrete to use in conjunction with it, that the problem of roofing-in large buildings in a fire-proof manner might have taken a totally different direction to the buttress system of equilibrium between thrusts and dead weight, which so characterizes Gothic vaulted buildings?

I am now trenching on my fourth heading, viz.: the suitability of the employment of concrete for roofs of buildings of a monumental character, where durability and fire-proof construction are required, and in proof of this I think I need only refer to the examples of splendid buildings erected in India, both in ancient and modern times, some of which have been described and illustrated in the *Transactions* of the Institute, and in which concrete figures certainly as the chief material in the construction both of roofs, vaults and domes. — *Alexander Payne, in the British Architect.*

Weights on Crowded Floors. — In the course of discussion at the Institution of Civil Engineers of a paper on "The Construction of Charing Cross Bridge," Mr. E. A. Cowper said he had tried the weight of a number of laborers, by weighing each man individually, and then by measuring the exact space they occupied when standing close together, as in a crowd, when he found their collective weight was fully 140 pounds per square foot. He was, however, aware that from 60 pounds to 80 pounds was often taken as a test load, but that was far below the weight of a crowd of able-bodied men. Mr. Mallet remarked that, during the building of Buckingham Palace, Mr. Nash ascertained the greatest possible load of human beings that could be brought upon a given space, with reference to the so-called fireproof floors of the palace. Within a hoop, he thought, of about 20 feet diameter, as many men were caused to stand as could be wedged into it, the last men being lowered down amongst the others. The result gave a load of 120 pounds per square foot. Mr. Hayter stated that 70 pounds per square foot was probably the maximum living load that could be crowded on a given space. Messrs. Cochrane & Co., had tried an experiment, selecting for it the tallest and most muscular men in their establishment, and the result proved that the estimate of 70 pounds was ample. Sir John Hawkshaw said he had been found fault with for assuming so much as 80 pounds per square foot as the weight of a crowd of human beings. French engineers and others were said to be content with 50 pounds to 60 pounds per square foot, but he was satisfied with 80 pounds per square foot. — *Engineering News.*

MISTAKES IN PLUMBING.

CHIMNEY-PIECE PILASTER, CONTINENTAL HOTEL, CANNES, FRANCE. ROGNAT, ARCHT. PELLEGRINI, SCULPTOR.

"MISTAKES in Plumbing" formed the subject of the closing lecture at the New York Trade-School. It is a well-known fact that many well-meaning plumbers unintentionally make mistakes, the future effect of which they, from many causes, are unable to foresee, and the idea of exposing popular errors in plumbing practice in connection with a line of instruction for young prospective members of the craft is certainly a happy thought, which may be of assistance to older operators of the ladle and cloth. Through the courtesy of Mr. Murphy we are enabled to give a general outline of "mistakes" as commonly made, and which, as will be seen, constitute "Thirty-nine Articles,' which, however, in this instance are to be avoided as being entirely subversive of the orthodox and generally accepted sanitary creed. The following is the order observed:

1. Not to carefully determine what the grade of a sewer shall be before commencing to lay the pipes.
2. Putting the pipes into a tight hole in the front wall where it enters the cellar.
3. Using T connections for branches for soil and waste pipes.
4. Tipping up traps so as to cause them to lose their seal.
5. Using larger traps than are necessary.
6. Connecting wastes from safes with soil or waste pipes.
7. Putting in a trap at foot of soil-pipe.
8. Connecting sanitary flushing closets without making proper provision for the ventilation of the traps or branches.
9. Running a vent-pipe in such a manner as to form traps, or where the overflow can enter.
10. Running the ventilating-pipes into chimneys or ventilating flues.
11. Placing traps at too great a distance from the fixtures for which they are intended.
12. The use, where it can be avoided, of pan-closets.
13. Connecting overflow of tanks directly with soil or waste pipes.
14. Having water-closets in rooms or opening into rooms where storage tanks are used.
15. Breaking joints in iron pipe, and not using proper fittings for change of direction; also using pieces of pipe as substitutes for sleeves or hubs.
16. Neglecting to trap leaders.
17. Connecting branch wastes with water-closet trap, particularly when separately trapped and vented.
18. Trapping connection for hot water from side coupling for boiler with water-back.
19. In not enlarging hot-water pipe to desired size, and in making wrong connection between the water-back and range.
20. Running "circulation"-pipe so as to form a trap or traps thereon.
21. Connecting the inside and outside of a double boiler with one connection to the water-back of the range.
22. Connecting the sediment-pipe of double boiler in such a manner as to render it possible to empty the inside before the outside boiler.
23. Neglecting to put in expansion-pipes or vacuum-valves where valve couplings are used on boilers.
24. Running the water-pipes without sufficient grade to empty them.
25. Putting up hot-water pipes without allowing for expansion, and having straight branches from hot-water pipes.
26. Using lead pipes for hot water where hot water is heated from a steam-supplied tank.
27. Using lead for lining tanks for storage for domestic purposes.
28. Using impure lead, such as old joints, etc., for calking joints.
29. Putting supply and waste pipes in inaccessible and undesirable locations where they are liable to freeze, and not sufficiently protecting them.
30. Connecting directly on supply-pipe the valves of water-closets.
31. Allowing raspings and filings to fall into pipes.
32. Taking keys out of ground key-cocks for the purpose of wiping them in.
33. Supplying bath-tubs from the bottom, thereby endangering the fouling of supply-pipes on lower stories by siphonage.
34. Putting in mains in a street without allowing for settlement and without properly blocking up under the tap.
35. Using pipe-hooks instead of metal racks and screws for supporting pipes in recesses or along ceilings.
36. Making joints with soldering-iron in place of wiping where required.
37. Using tin-lined pipe for hot water.
38. Not using a boiler of a size proportioned to that of the range, also using ranges with small water-backs.
39. Omitting to close terminations of soil and waste pipes, also the ends of Croton or supply pipes which are likely to be obstructed.

The lecturer does not claim that the above enumeration of "Mistakes" exhausts the subject by any means, but as they were carefully illustrated by blackboard diagrams, and the evil results likely to follow their introduction into a system of house plumbing pointed out with great minuteness, their consideration was well suited to bring a valuable course of instruction to a close. — *The Metal Worker*.

KIDDER'S POCKET-BOOK.

Boston, April 4, 1885.

To the Editors of the American Architect: —

Dear Sirs, — As you were so kind to notice my "*Architect's and Builder's Pocket-Book*" at so great length in your issue of to-day, perhaps you will permit me to say a few words partly in reply and partly to your readers. The book which you have so kindly reviewed was compiled to meet a want which I have long felt myself, and which I knew to be common with other architects and draughtsmen (for, though educated as a civil engineer, I am by practice and experience an architect); and also to do what little I could to promote better and more intelligent construction of our modern buildings. I *am not* desirous of "insinuating" myself into the place of Trautwine, and no one has a greater respect for his work than I; but every architect can see that it was not written for him. The profits which the author of such a work can expect to realize would be but small compensation for the labor involved in its preparation, were the work not more a labor of love than of gain. In regard to the whiskey-and-rum table (which occupies but an inch of space in the book), it was compiled from a book of tables, and its presence may be accounted for by the same reason as much other information, that while it is perhaps of no very especial interest to architects, yet it occupies but little space, and it may sometime be found useful. It is not inconceivable of an architect having a client who should wish such things stored in his cellar, or designing a building destined to contain such articles. In short, information least likely to be wanted, is oftentimes greatly needed and hardest to find, and where such information occupies but little space, I thought best to put it in.

If your critic will go into some of the country towns of eastern Maine he can see a tree growing which the people there call "fir." In regard to piling, the best information that we have must be used with great discretion, and I think that architects might gain considerable valuable information by computing the loads borne by the piles under the heaviest of their buildings, and compare results by publishing them in the columns of your paper, describing at the same time the soil in which the pile is driven, length and size of pile, amount of sinkage at last blow, etc. The same information in regard to the loads on brick piers would also be of great value. There is also a great want for more practical information on the size and shape of large chimneys, both for steam heating and for engine boilers.

In conclusion, I wish to say to your readers that in the third edition of my book (the second will soon be out), I shall endeavor to make some additions, and such corrections as may be necessary, and I shall feel grateful for any criticisms, and especially for any information or suggestions which will tend to make the book more valuable to them and more worthy of its name.

Thanking you for your kindly suggestions and criticisms, I am

Respectfully yours, F. E. Kidder.

CENTRES FOR A GROINED VAULT.

Hartford, April 4, 1885.

To the Editors of the American Architect: —

Dear Sirs, — In describing his method of laying out the centres for a groined vault, Mr. F. E. Kidder does not seem to have read very carefully the problem as given by me. He says: "Work out by the principles of projection the form of the diagonal ribs. It will be elliptical in shape, if the vaults are segmental." Now, then, I say distinctly in my letter that the form of the diagonal ribs is to be a *segmental* arch, not elliptical, consequently the course of the soffit on the wall side will be elliptical, and it is principally the finding of *this* elliptical curve by a correct method, which induced me to apply to you for a solution of the problem. If the crown of the side arches were on line with the crown of the diagonal ribs, — making allowance for the projecting rib moulding — then it would be easy to find the true curve of the side arches by the principles of projection; but this difference in height, as stated in my letter, is what causes the difficulty of finding this curve.

Hoping I have made myself sufficiently clear, I remain,

Respectfully, yours. A. Vault.

Boston, April 9, 1885.

To the Editors of the American Architect: —

Dear Sirs, — I assumed that "A. Vault" referred to the wooden centre, for three reasons: 1. It is not customary to assume the

intersection of two vaults, and make the vaults to fit. 2. He used the word centres, and I thought that if the diagonal ribs were segmental, the wall arches would be irregular curves, and hence would have no centre. 3. His sketch was not drawn right for the diagonal ribs to be segmental. I will now answer his inquiries, in two ways, one of which, I hope, will be satisfactory.

Problem 1.—Given the diagonal ribs of a groined vault, with all the elements in the soffits of the vault, straight lines and inclined at a given angle with a horizontal, to find the curve of the wall arch.

Solution. — Draw the plan Figure 1, with the dotted lines $a\,a'$, $b\,b'$, etc. Draw Figure 2, giving the true curve of the intersection of the vaults. The base, $B\,e$, will be, of course, equal to $B\,e'$, Figure 1. I have assumed that the diagonal ribs are 6 inches below the line of intersection of the vaults, so that the height is 6 feet 6 inches.

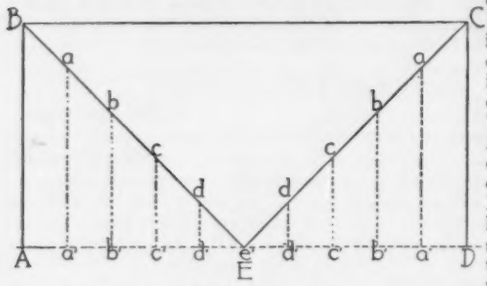


Fig. 1.

Draw a section through centre of vaults, as shown in Figure 3, as follows: $B\,C$ equals 20 feet; $E\,e'$ equals 6 feet 6 inches. Draw the elevation of the diagonal line, by making the lines a' 1, b' 2, c' 3, etc., of the same length as the corresponding lines in Figure 2. If the crown of wall arch is 1 foot 3 inches below soffit of ribs, it will be 1 foot 9 inches below the curve of intersection, assuming the depth of rib, 6 inches; then A, Figure 3, will be 1 foot 9 inches lower than the point E, and as the soffit of vault is to be a straight line, the line $A\,E$ will give the line of soffit of side vault, at crown. Find the elevation of wall curve as follows: A point in the wall curve opposite d, Figure 1, will be as much lower than the point 4, Figure 3, as the line $A\,E$, Figure 3, pitches in the distance $A\,d'$, Figure 1. This distance is the space between the lines $A\,E$ and $A\,F$, Figure 3, on the line d' 4. Laying off this space from the point 4, on line d' 4, gives the point 4', which must be a point in the wall curve. The points 1', 2', 3', Figure 3, are found in the way. This gives the true elevation of the wall curve that will meet the requirements of the problem, and of course it is the only curve that will do so. To be sure that this solution is right, I have constructed a model which proves it. Such a vault could probably not be built of masonry, as there is nothing to resist the thrust at the crown.

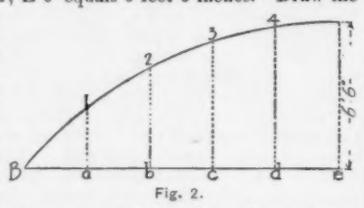


Fig. 2.

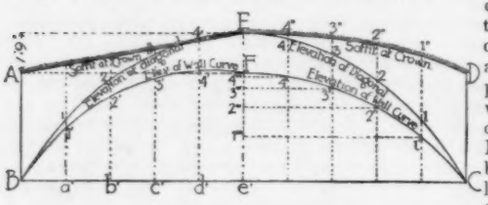


Fig. 3.

Problem 2. — Assuming the curve of the diagonals to be a segment of a circle, what curve will give a proper line for the vaults, and what will be the nature of the soffit, the difference in height between crown of diagonal and wall arch being 1 foot 9 inches? The solution of this problem is shown in the right side of Figure 3. The curve, $C\,1\,2\,3\,4\,E$, is the elevation of the diagonal, being, of course, the same as in Problem 1. Judging from the wall curve found in Problem 1, it appears that a circular curve, passing through F and C, will be the best form for the soffit of the side vaults. Assuming this curve, we must now find the line which would be given by a vertical section passing through the crown of the side vault, on the line $E\,D$. If the vault is a true vault, then the point d' in the crown (Fig. 1) must be as much above d, as the point F, Figure 3, is above 4'. The height of the point d, Figure 1, is the point 4, Figure 3, and laying off 4 4'' (Fig. 3), equal to $F\,4'''$, we have the point 4'', which gives the elevation of the point d'. In the same way we obtain 3'', which is the elevation of the point c', and so on for all the points desired.

This shows that we may assume the curve of the diagonal and of the wall arch, but the soffit will be something like the surface of a sphere. Problem 1 shows that if we assume the diagonal curve and the soffit, we may obtain a wall arch which may not be stable, and whose appearance might not be desirable.

I would recommend that your correspondent build his vault as shown in the right side of Figure 3; it will then be stable, look well, and answer his requirements, I think. Hoping this will prove a satisfactory answer, I remain, Yours truly, F. E. Kidder.

VANDALISM, EXCUSABLE OR INEXCUSABLE?

Boston, April 10, 1885.

To the Editors of the American Architect: —

Dear Sirs,—To certain criticisms on the general scheme of the Back Bay Park, of this city, printed in your paper some five years ago, at the commencement of the work, Mr. Olmsted was kind enough to reply, meeting the objections then urged against his design, so far as he could meet them, and giving his views as to the probable effect of the measures he proposed to carry out.

I am encouraged by this courtesy on the part of Mr. Olmsted, to ask him to repeat it, by explaining to a wondering public the reason for the wholesale destruction of fruit trees on the lands of the West Roxbury Park.

Anybody who is at all familiar with this region, will remember it as made up in great part of half a dozen old farms, on which were large numbers of apple trees, and a good many cherry and pear trees. Most of these were of large size, and although doubtless not in the best condition, regarded from the fruit-grower's point of view, were strong and vigorous, and could be depended upon for doing their full duty in blossoming time, to say nothing of the crop of fruit which followed.

Well, these trees, some hundreds in number, have now been all cut down. They lie in rows and in clumps, on every field; a melancholy spectacle. I may not be absolutely correct, but I am sure I can not be far wrong, when I say that over the whole five hundred acres or so there is not an apple tree or a cherry tree or a pear tree left standing, with the exception of a few around the house at the corner of Walnut avenue and one of the cross streets, now occupied by the Park Department. Mr. Olmsted has abolished apple blossoms forever over the whole stricken region.

"De par le roi, défense a Dieu
De faire miracle en ce lieu."

Such a piece of work as this has of course not been done without some deliberation, and there must have been a strong reason for it in the mind of the landscape-gardener. What was the reason? We have heard it attributed, at a venture, to a tender regard for the bowels of the small boy who is expected to disport himself in these fields during the season of green apples; and again, to a proper disgust for his rougher relations who, a little later, may break a bough or two in their haste to enjoy the riper fruit. It may have sprung from a fine professional disesteem for so common and vulgar a poor relation as these native growths of the home soil. Be the reason what it may, a good many persons, whose objurgations at what seems to them a wanton outrage are both louder and deeper than Mr. Olmsted would perhaps suspect, would be glad to know it, and to know at the same time what attraction that gentleman proposes to substitute for the glory of a New England apple orchard in May.

C.

NOTES AND CLIPPINGS.

German Architectural Diplomats. — It is said that the addition of the architectural attachés to the German embassies in different countries has met with marked success. Their reports to their Governments are of great value to the Minister of Public Works, and are read with great interest generally.

The Old Hollis Street Spire. — Workmen began yesterday taking down the spire of the old Hollis Street Church. The vane measured 7 feet 1 inch from tip to tip, the globe was 6 feet 6 inches in circumference, and the letters were 12 inches square. The height by actual measurement from the sidewalk to the under side of the globe was 183 feet 4 inches, and from the sidewalk to the top of the lightning rod was 203 feet 7 inches. The guesses on the measurement of the vane ranged from 2 to 40 feet, and on the height of the entire spire from 102 to 410 feet. Mr. Brigham has presented the vane, cardinal points and globe to the Bostonian Society at the Old State House, and has given one of the larger pews and four of the pillars of the spire to Major Ben. Perley Poore. — *Boston Journal.*

The Bull Rock Lighthouse.—About twenty miles west of Castletown Berehaven, Ireland, lately selected as a station for the British Navy, lies the Calf Rock, and three miles to the northwest is situated the Bull, where the Government are at present erecting a lighthouse to replace that of the Calf Rock, which was swept away in the great storm three years ago. A steamer belonging to the Board of Lights conveys the workmen from Castletown to the Bull Rock, but so dangerous is the approach, in consequence of the swift currents which prevail here, and which make the rock, even in the calmest weather, a very Scylla to modern navigators, that ordinary visitors are forbidden by a Board order from essaying the dangerous passage. By driving from Castletown to Dursey Sound, a journey of about fifteen miles, one may get a good idea of the boon the light will prove to storm-tossed mariners, by observing the inhospitable nature of the coast of which it is to serve as a beacon. The coast presents to the seaside a precipitous rocky wall, worn into strange shapes by the action of wind and wave, and broken occasionally by deep, narrow gorges or bays, studded with rock islands. Three rocks, the Bull, Cow, and Calf, lie off Dursey Head, the Bull situated at a distance of three miles to the northwest. The rock rises more than three hundred feet above the sea, and is pierced through from side to side by an immense natural cavern. This year will be wholly occupied in constructing steps and cutting barracks in the solid rock to house the workmen. Next year a chamber will be excavated in the summit, from which the top of the lantern will rise above the rock, so that the light will send out its beams from a height of more than three hundred feet above the surface of the sea. — *Iron Age.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

314,750. Shutter-Bower. — Michael R. Tallman, Philadelphia, Pa.

314,778. Lock. — John H. Barnes and Joseph H. Woolaston, New Haven, Conn.

314,781. Vault-Cover. — William H. Beckwith, Pittsburgh, Pa.

314,782. Sash-Fastener. — David E. Bedell, Newark, N. J.

314,799. Sash-Cord Fastener. — Wellington H. Christ, Pine Grove, Pa.

314,828. Securing Shanks to Glass Knobs. — John W. Haines, Cambridge, Mass.

314,855. Weather-Strip. — John H. Lamoureux, Robinson, Ill.

314,882. Ventilator. — Alfred S. Seaman, Frackville, Pa.

314,884. Dry-Closet, etc.—Isaac D. Smead, Toledo, O.

314,899. Fire-Escape Ladder. -- Robert M. Wilson, New York, N. Y.

314,918. Sash-Fastener. — Benj. S. Curry, Manatee, Fla.

314,943. Cock for Wash-Basins. — Joseph Jungbluth, Erie, Pa.

314,945. Heating-Apparatus. — Ernst Korting, Hanover, Prussia, Germany.

314,974. Sash-Fastener.—Robert S. Noble, West Bay City, Mich.

315,000. Ratchet Mechanism for Bit-Braces, Screw-Drivers, etc. — William R. Clarkson, Buffalo, N. Y.

315,014. Bench-Plane. — James Duncan, Coshocton, O.

315,016. Tile-Making Attachment for Brick-Machines.—J. B. Foster, Zurich, Ontario, Can.

315,025. Fire-Escape. — George M. Heath, Rockingham, Vt.

315,040. Hot-Air Furnace. —Otis Jones, Chicago, Ill.

315,061. Shingle. — Willis J. Perkins, Grand Rapids, Mich.

315,063. Mechanism for Flushing Tanks.—Geo. C. Phillips, Providence, R. I.

315,083. Self-closing Hatchway. — Richard D. Thackston, St. Louis, Mo.

315,111. Door or Shutter. — Emerson Belden, Green Island, N. Y.

315,124. Staple.—William Chisholm, Cleveland, O.

315,137. Screw-Driver. – Zachary T. Furbish and Franklin L. Hamlen, Augusta, Me.

315,138-140. Burglar-Alarm. —Alexander C. Gibson, Chicago, Ill.

315,152. Burglar-Alarm.—Ira G. Leek, San Francisco, Cal.

315,166. Elevator. —Edward B. Powell, Portland, Mich.

315,200. Manufacture of Brick. — Nathaniel S. Willet, Newark, N. J.

315,205. Latch-Lock. — Harlan P. Young, Lowell, Mass.

315,221. Door-Check and Holder. — Thomas E. Barrow and Henry Wade, Mansfield, O.

315,264. Combined Level, Square and Bevel. —Matthew Euinton, West Upton, Mass.

315,284. Door-Check. — Charles E. Hewitt, Brandon, Vt.

315,294. Sash-Fastener. — Edwin A. Johnson, Allegheny City, Pa.

315,302. Door-Spring. — Salem T. Lamb, New Albany, Ind.

315,307. Lock. — Washington I. Ludlow, Cleveland, Ohio.

315,313. Annunciator. — James E. McDuff and John F. Doherty, Providence, R. I.

315,342. Basin-Attachment for Bath-Tubs. — John Robinson and William J. Robinson, Philadelphia, Pa.

315,345. Hearth Guard or Shield.—William J. Sanders, Gilmer, Tex.

315,347. Sash-Pulley.—John B. Schroder, Cincinnati, O.

315,358. Brick and Tile Machine.—William W. Wallace, Frankfort, Ind.

315,365. Window-Frame. — Henry E. Willer, Milwaukee, Wis.

315,367. Fireplace. — Isaac C. Williams, Auburn, W. Va.

315,372-374. Saw. — Emanuel Andrews, Williamsport, Pa.

315,393. Shutter-Worker. — Russell G. Dudley, Jersey City, N. J.

315,412. Illuminating Tiling and Grating for Covering Vaults, Roofs, etc. — Thaddeus Hyatt, Brooklyn, N. Y.

315,422. Heating Device.—George L. Lavery, Boston, Mass.

315,439. Combined Burglar-Alarm, Match-Safe and Sash-Fastener.—Darius T. Phillips, Chicago, Ill.

SUMMARY OF THE WEEK.

Baltimore.

Stable. — George Archer, architect, is preparing drawings for Messrs. Denny & Mitchell, for a three-st'y stable, 100′ x 120′, with tower 14′ square and 80′ high, to be erected cor. North Avenue and Oak St., to be of brick, with marble and terra-cotta finish, and to cost about $25,000; John Waters, builder.

Building Permits. — Since our last report forty-nine permits have been granted, the more important of which are the following: —

M. Z. Hammen, 23 two-st'y brick buildings, s s Bowham St., between Wooster and Stockholm Sts.

Atto Goldbach, 7 two-st'y brick buildings, w s Chapel St., commencing n w cor. Jefferson St.

Mary Gerrens, three-st'y brick building, s s Chase St., between Valley and Hillman Sts.

Fannie Carrear, three-st'y brick building, s s Chase St., w of Valley St.

Charles E. Harker, 2 two-st'y brick buildings (square), e s Ensor St., between Chase and Biddle Sts.

J. W. Gerken, 2 two-st'y brick buildings, n s Boyd St., between Schroeder and Amity Sts.

Geo. Klein, 3 two-st'y brick buildings, w s Ropewalk Alley, between Heath and Barney Sts.

Wm. Klein, 2 two-st'y brick buildings, w s Ropewalk Alley, between Heath and Barney Sts.

L. German, 2 three-st'y brick buildings, commencing n w cor. Edmondson Ave. and Carlton St.

P. Heavy and others, 2 three-st'y brick buildings, commencing s w cor. Hanover and Clement Sts.

Wm. Reisinger & Son, three-st'y brick warehouse, and two-st'y brick stable, s s Portland St., between Greene and Emory Sts.

Chas. Michelman, 8 two-st'y brick buildings, e s Burke St., s of Aliceanna St.

F. D. Sauerwein, 8 three-st'y brick buildings, n s Lanvale St., commencing n e cor. Calhoun St.

John J. Purcell, 2 three-st'y brick buildings, n s Patterson Ave., between Stricker St. and Parrish Alley.

Geo. S. Brown, 14 two-st'y and mansard brick buildings, e s Fulton Ave., commencing s e cor. Harlem Ave.; 13 two-st'y brick buildings, w s Bruce Alley, s of Harlem Ave.; and 3 two-st'y and mansard brick building, s s Harlem Ave., commencing s w cor. Bruce Alley.

Chas. H. Callis, 14 two-st'y brick buildings, n s Preston St., e of Broadway.

M. Fallon, three-st'y brick building, s s Chase St., w of Hillman St.

Timothy Sullivan, three-st'y brick building, s w cor. Chase and Hillman Sts.

J. F. Weissner, three-st'y brick building, w s Belair Ave., between Federal and Boyd Sts.

G. Kaelsel, three-st'y brick building, e s Gay St., between Forest and Aisquith Sts.

Geo. C. Herschman, 10 three-st'y brick buildings, n s Biddle St., commencing n w cor. Ensor St.

Charlotte Lippe, 2 three-st'y brick buildings, George Alley, between Pennsylvania Ave. and Biddle St.

Boston.

Building Permits.—*Brick. — Tremont St., Nos.* 1285 *and* 1287, cor. Prentiss St., apartment-house, 38′ and 39′ 4″ x 80′; John Miller, owner: J. E. Potter, builder.

Berkeley St., Nos. 92, 94 *and* 96, apartment-house, 23′ 6″ x 48′; Mary Knowlton, owner; Alvin Knowlton, builder.

Wood. — Tremont St., near Newton Line, dwell. and restaurant, 26′ and 3.′ x 31′; J. F. Walsh, owner; Michael Ryan, builder.

Surrey St., near Foster St., poultry-house, 14′ x 25′; Chas. A. Wheeler, owner.

Harrison St., near Green Hill St., 2 dwells., 17′ and 25′ x 35′ 6″; A. W. Wright, owner; C. E. Currier, builder.

Harrison St., near Green Hill St., 2 dwells., 17′ and 25′ x 35′ 6″; C. E. Currier, owner and builder.

Dorchester Ave., No. 30, office, 18′ x 22′; H. S. Jordan & Co., owner; William McLean, builder.

East Fifth St., No. 590, dwell., 23′ x 42′; J. R. Duce, owner; W. T. Eaton, builder.

Bremen St., near Porter St., dwell., 22′ x 39′; L. F. Lambert, owner; R. H. Sproule, builder.

Border St., No. 244, stable and storage, 20′ x 35′; P. M. Gifford, owner and builder.

East Third St., near H St., dwell. and store, 19′ x 30′; James V. Devine, owner and builder.

H St., cor. Emerson St., dwell., 17′ and 24′ x 33′; owner and builder, same as last.

East Third St., cor. Emerson St., dwell., 21′ 4″ x 33′; owner and builder, same as last.

H St., cor. East Third St., dwell., 21′ 4″ x 33′; owner and builder, same as last.

Emerson St., near H St., 2 dwells., 18′ and 20′ x 33′; owner and builder, same as last.

East Third St., near H St., dwell., 17′ x 30′; owner and builder, same as last.

Dudley St., cor. Dudley Pl., dwell., 23′ x 52′; F. W. Kittredge, owner; James Portune, builder.

Dudley St., near Blue Hill Ave., dwell., 23′ x 52′; owner and builder, same as last.

Dudley St., near Blue Hill Ave., dwell., 20′ x 52′; Mabel Wheaton, owner; Jas. Portune, builder.

Dudley St., opposite Magazine St., dwell., 20′ x 52′; owner and builder, same as last.

Mechanic St., off Brighton Ave., 2 dwells., 19′ x 28′; Edmund Dole, owner; Christopher Keake, builder.

Phillips St., near Conant St., 2 dwells., 22′ x 35′; L. S. Conant, owner; W. T. Eaton, builder.

Dudley St., near Blue Hill Ave., dwell., 20′ x 52′; Mabel Wheaton, owner; James Portune, builder.

Dorchester Ave., near Greenwich St., dwell. and store, 23′ x 32′; James O'Neil, owner; James Portune, builder.

Brooklyn.

Building Permits. — *Humboldt St., No.* 259, w s, 75′ n Ten Eyck St., three-st'y brick tenement, tin roof; cost, $7,000; owner and architect, John McQuade.

St. John's Pl., s s, 235′ w Seventh Ave., 4 three-st'y brick dwells., tin roofs; cost, each, $8,000; owner and architect, Thomas F. Green, 195 Sixth Ave.

Halsey St., s s, 140′ e Reid Ave., two-st'y brick dwell., tin roof; cost, $4,500; owner, James Herring, 632 Halsey St.; architect, M. Walsh.

Willoughby Ave., n s, 40′ w Hall St., 4 five-st'y brick dwells., tin roofs; cost, each, $3,500; owner, Henry C. Coe, 535 Washington Ave.; architect, A. Hill.

Putnam Ave., s s, 295′ w Tompkins Ave., 3 three-st'y brown-stone dwells., tin roofs, wooden cornices; cost, each, $9,000; owner and builder, H. A. Weed, 243 Putnam Ave.; architect, I. D. Reynolds.

South Fourth St., n s, 25′ w Twelfth St., three-st'y brick tenement, tin roof; cost, $6,500; owner, Mrs. Turner, South Fifth St., near Division Ave.; architect, J. Platte; builder, S. J. Burrows.

Madison St., n s, 80′ e Bedford Ave., three-st'y brick dwell., tin roof; cost, $6,000; owner, John S. or John B. Grube, 133 Madison St.; architect, A. Hill.

Monroe St., s s, 235′ e Throop Ave., 2 two-st'y brown-stone dwells.; cost, each, $4,000; owner, architect and builder, W. J. C. Miller, 299 Sumner Ave.

Lincoln Pl., s s, 150′ w Seventh Ave., 3 three-st'y brown-stone dwells., tin roofs; cost, each, $10,000; owner and mason, John Monas, 92 Park Pl.; architect and contractor, J. J. Gilligan.

Locust St., s s, 175′ e Broadway, 2 three-st'y frame (brick-filled) tenements, tin roofs; cost, each, $4,000; owner, Chas. Goetz, Park Ave., cor. Throop Ave.; architect, G. Hillenbrand; builder, D. Kreuder.

Lafayette Ave., n s, 119′ 6″ w Bushwick Ave., 3 two-st'y frame dwells. (brick-filled), tin roof; cost, each, $3,500; owner, Anna A. Fardon, 1132 Lafayette Ave.; builder, A. A. Fardon.

Lafayette Ave., n s, 87′ 6″ w Bushwick Ave., two-st'y frame dwell., tin roof; cost, $3,500; owner and builder, same as last.

Foot of North Tenth St., 250′ w First St., two-st'y brick cooperage-building, gravel roof; cost, $12,000; owner, Pratt M'f'g Co., on premises; architect, J. A. Moffett; builder, not selected.

Van Dyke St., n s, 150′ w Richard St., three-st'y brick dwell., tin roof; cost, $6,200; owner, A. H. Gutkes, 72 Delevan St.; architect, F. E. Lockwood; builders, P. Kelly & Sons.

Sixth Ave., s w cor. Nineteenth St., three-st'y frame store and dwell., tin roof; cost, $4,000; owner, Henry Schmidt, cor. Eighteenth St. and Sixth Ave.; architect, D. E. Harris; builders, E. P. Crane and D. E. Harris.

Oakland St., n w cor. Kent St., three-st'y frame (brick-filled) store and tenement, gravel roof; cost, $4,800; owner, James E. Martin, on premises; architect, F. Weber; builders, Port & Walker.

Jackson St., n s, 50′ w Humboldt St., three-st'y frame (brick-filled) tenement, tin roof; cost, $6,000; owner, H. G. D. Rohlfs, 183 Jackson St.; architect, John Platte; builders, Jacob Rauth and Jacob Bossert.

Broadway, n e cor. Palmetto St., 5 three-st'y brown-stone stores and flats, tin roofs; cost, each, $8,000; owners and builders, Cozzens & Barton, 173 Stuyvesant Ave.; architect, I. D. Reynolds.

Putnam Ave., n s, 435′ e Tompkins Ave., 3 three-st'y brown-stone dwells., tin roofs, wooden cornices; cost, each, $9,000; owner, John F. Saddington, 462 Willoughby Ave.; architect, F. D. Vrooman.

Taylor St., n s, 46′ w Kent Ave., two-st'y brick stable, gravel roof; cost, $3,000; owner, T. F. Taylor, foot of Wilson St.; architect and builder, J. H. Devoe.

Smith St., w s, about 60′ n Ninth St., 3 three-st'y brick tenements, gravel roofs; cost, each, $3,000; J. G. L. Boettcher, 101 Dean St.; architects, Parfitt Bros.; builders, Kolle & Starbler.

Putnam Ave., n s, 395′ e Tompkins Ave., 2 two-st'y brown-stone dwells., tin roofs, wooden cornices; cost, each, $7,000; owner, John F. Saddington, 462 Willoughby Ave.; architect, F. D. Vrooman.

Hoyt St., w s, 30′ s Sackett St., 4 two-st'y brown-stone dwells., felt and gravel roofs; cost, each, $3,200; owner, E. Pearson, 24 First St.; architect and builder, Theo. Pearson.

Jefferson St., n s, 24′ w Tompkins Ave., 9 three-st'y brown-stone dwells., tin roofs; cost, each, $6,500; owners, etc., Colson & Reiner, 122 Tompkins Ave.

Wythe Ave., Nos. 98 *and* 100, w s, 2 four-st'y brick stores and tenements, tin roofs; cost, each, $9,000; owner, F. Thill, cor. Taylor St. and Kent Ave.; architect and builder, J. H. Devoe.

Gates Ave., s s, 225′ e Nostrand Ave., four-st'y Trenton brick store and flats, gravel roofs; cost, $8,500; owner, Mary Moore, 110 Gates Ave.; architect, Amzi Hill; builder, Paul C. Grening.

First St., s s, 100′ w Sixth Ave., 10 two-st'y brown-stone dwells., tin roofs; cost, each, $4,500; owners and contractors, Conway & Moubray, s w cor. First St. and Sixth Ave.; mason, not selected.

Union St., s e cor. Seventh Ave., and *President St.*, n e cor. Seventh Ave., 8 three-st'y brown-stone dwells., metal roofs; cost, each, $10,000; owner, architect and builder, Wm. Flanagan, 46 Berkeley Pl.

Alterations. — *Fourth Ave.*, n w cor. Wyckoff St., three-st'y brick extension, tin roof; cost, $4,400; owner, Henry Cooper, Bowery, cor. Houston St., architect, B. W. Warner; builders, M. Ryan and B. C. Condit.

Chicago.

Building Permits.—C. W. Faulkner, two-st'y dwell., 318 North State St.; cost, $5,000; architect, W. L. Beers.

J. Blain, two-st'y dwell., 809 Clybourn Ave.; cost, $3,500; builder, W. H. Hellman.

G. Nocquet, two-st'y dwell., 22 Elkgrove St.; cost, $3,000; builder, N. Rathgen.

J. Lathau, three-st'y dwell., 132 Hudson Ave.; cost, $6,000.

Wm. Kroeschel, two-st'y dwell., 457 Dayton St.; cost, $5,000.

Mrs. S. Gannon, two-st'y dwell., 685 Superior St.; cost, $2,600.

J. Shannon, two-st'y store and dwell., 3529 Wentworth Ave.; cost, $2,500.

C. Seeger, three-st'y store and flats, 137 Hurlbut St.; cost, $6,000; architect, H. Gnoer; builder, A. Kuerker.

Wm. Frampeim, cottage, 324 Twenty-fourth St.; cost, $4,300.

S. Meilon, two-st'y store and dwell., 644 Centre Ave.; cost, $3,000; builder, A. Wendt.

C. E. Mantz, three-st'y dwell., 53 Belleview Pl.; cost, $7,000; architects, Frommon & Gebson.

C. Schauss, three-st'y store and flats, 930 Halsted St.; cost, $5,000; architect, C. F. Berlin.

S. Vankirk, 2 two-st'y dwells., 429 Idaho St.; cost, $4,500.

Geo. Ross, two-st'y dwell., 539 Jackson St.; cost, $3,000.

A. G. Merriman, two-st'y dwell., 541 West Jackson St.; cost, $4,000.

F. N. Mills, 3 two-st'y dwells., 3116-3120 Vernon Ave.; cost, $10,000.

J. Monahan, three-st'y store and dwell., 106 Elizabeth St.; cost, $5,000; builders, McMillan Bros.

C. Mages, cottage, 729 Hoyne Ave.; cost, $2,800.

J. Stash, two-st'y dwell., 458 Noble St.; cost, $3,500; builders, Wenz & Bishop.

J. Hilbert, two-st'y dwell., 948 North Halsted St.; cost, $3,000; builder, G. Wolf.

G. Brayton, three-st'y stores, 3518 and 3520 Vincennes Ave.; cost, $2,500.

J. Krauter, two-st'y store and dwell., Milwaukee Ave.; cost, $4,500; architect, Kley.

J. Fenderclout, two-st'y dwell., 476 West Congress St.; cost, $8,000; architect, J. Warner; builder, J. Bagley.

J. H. Burke, two-st'y dwell., 191 West Congress St.; cost, $2,800.

Wm. Brown, two-st'y dwell., 1031 Wilcox Ave.; cost, $4,000; builder, D. Wilkie.

J. Stepalek, two-st'y store and dwell., 623 Centre Ave.; cost, $3 500; builders, Waska & Sons.

A. Vaughan, two-st'y dwell., 678 Washington St.; cost, $7,000; architect, J. H. Moore.

V. Smerz, three-st'y dwell., 828 Allport Ave.; cost, $4,000.

F. E. Kreussler, three-st'y rear addition, 2168 Archer Ave.; cost, $3,000.

E. W. Egeress, three-st'y store and dwell., 209 North Ashland Ave.; cost, $3,000; architects, Lund & Gilbert.

W. Woelker, two-st'y dwell., 514 West Chicago Ave.; cost, $3,000; architect, F. Hagerman.

Mrs. Mary Scudder, two-st'y dwell., 63 Belleview Pl.; cost, $10,000; architects, Cobb & Frost.

J. Thompson, 4 cottages, North Leavitte St.; cost, $5,000.

G. Foreman, two-st'y dwell., Michigan Ave.; cost, $25 000; architect, L. B. Dixon.

Denver, Col.

BUILDING PERMITS.—E. F. Hallack, three-st'y brick business house, 42′ x 100′, Nineteenth St.; cost, $12,000.

Wm. Scott Lee, dwell., 29′ x 60′, Grant Ave.; Varian & Sterner, architects; cost, $7,000.

Donald Fletcher, two-st'y brick business house, Sixteenth St.; cost $6,000; Fred A. Hale architect.

Mrs. E. B. Howland, dwell., 29′ x 48′; Clarkson St.; Wm. Quayle, architect; cost, $3,700.

A. A. Higgenbotham, dwell., 25′ x 56′; Pearl St.; Wm. Quayle, architect; cost, $4,500.

P. P. Wilcox, two-st'y brick business house, 50′ x 100′; Curtis St.; cost, $15,000.

B. M. & A. S. Hughes, two-st'y brick business house; Edbrooke & Co., architects; Sixteenth St.; cost, $15,000.

E. B. McCrary, two-st'y brick dwell.; Evans St.; Edbrooke & Co., architects; cost, $6,000.

Mrs. S. H. Moore and Mrs. Alfred Wolff, two-st'y brick dwell., South Fourteenth St.; Fred A. Hale, architect; cost, $7,000.

New York.

FLATS.—On the south side of Ninety-second St., commencing 132′ w of Madison Ave., a five-st'y brownstone flat, 25′ 6″ x 100′ 8″, is to be built for John Livingston, from plans of Mr. F. T. Camp.

For Thomas Smith, a five-st'y brick and brownstone flat and store, 25′ x 90′, is to be erected on the n e cor. of One Hundred and Fifteenth St. and Lexington Ave., from plans of Messrs. Babcock & McAvoy; cost, $20,000.

HOUSES.—Five three-st'y and basement brown-stone houses are to be built for Mr. V. D. Genovese, on the n s of Eighty-second St., 200′ w of Ninth Ave., from plans of Mr. E. Gandolfo.

On the n s of Eighty-second St., 100′ e of Ninth Ave., 4 four-st'y and basement high-stoop dwells. are to be erected by Richard Deeves.

STORE.—On the n s of White St., between Church St. and West Broadway, a six-st'y iron-front store, to cost $25,000, is to be erected, from plans of Messrs. Cleverdon & Putzel.

BUILDING PERMITS.—*West Thirtieth St., No.* 213, three st'y and basement stone and brick dwell., slate and tin roof; cost, $20,000; owners, Nuns of St. Dominick, Sister M. Seraphina Stramer, Superioress, Brooklyn; architect, Wm. Schickel.

West Thirty-fifth St., No. 238, five-st'y brick tenement, tin roof; cost, $14,000; owner, Leonard Gattman, 326 East Fifty-second St.; architects, Schwarzman & Buchman; builder, John F. Moore.

Seventy-third St., s s, 100′ e Madison Ave., 10 four-st'y brown-stone front dwells., tin roofs; cost, three, each $22,000; five, each $20,000; and two, each $18,000; owner, architect and builder, R. W. Buckley, 810 Fourth Ave.

One Hundred and Eighth St., n s, 100′ w Third Ave., four-st'y brick workshop, tin roof; cost, $8,000; owner, Michael Fallihee, 149 East Fifty-third St.; architect, John Sexton.

Second Ave., No. 2108, five-st'y brown-stone front tenement, tin roof; cost, $20,000; owner, Adam Harrmann, on premises; architect, Wm. Fernschild.

Second Ave., s e cor. Eighty-fourth St., 2 five-st'y brick tenements and stores, tin roof; cost, $18,500 and $22,000; owner, Eva Muller, 446 East Seventy-sixth St.; architect, John Brandt.

Eighty-fourth St., s s, 300′ w First Ave., 4 five-st'y brown stone front tenements, tin roofs; cost, each, $16,500; owner and architect, same as last.

Eighty-fourth St., n s, 100′ e Second Ave., 2 five-st'y brown-stone front tenements and stores, tin roofs; cost, each, $18,000; owner and architect, same as last.

Eleventh Ave., s e cor. Seventy-fifth St., 6 three-st'y brown-stone front dwells., slate and tin roofs; owners and architects, Lamb & Rich, 265 Broadway; builders, Alex. Brown, Jr., and John J. Brown.

Eighty-fourth St., n w cor. Boulevard, 10 three-st'y brick dwells., tin and slate roofs; owner, George W. Rogers, 104 East One Hundred and Twenty-fourth St.; architects, Cleverdon & Putzel.

Eighth Ave., s w cor. One Hundred and Sixteenth St., 2 five-st'y brick flats and stores, tin roofs; cost, each, $17,000; owner, James Connor, 172 East One Hundred and Twelfth St.; architect, G. Robinson, Jr.

Eighth Ave., w s, 40′ s One Hundred and Sixteenth St., 2 four-st'y brick flats and stores, tin roofs; cost, each, $22,000; owner and architect, same as last.

One Hundred and Thirty-first St., s s, 225′ w Sixth Ave., 4 three-st'y and basement brick dwells., tin roofs; cost, $12,000; owner, Samuel O. Wright, 103 West Thirtieth St.; architects, Cleverdon & Putzel.

St. James St., Fordham, two-st'y frame dwell., shingle roof; cost, $4,000; owner, John B. Haskin, Fordham; builders, C. V. Folin & Son.

One Hundred and Forty-eighth St., s s cor. Willis Ave., three-st'y frame tenement, tin roof; cost, $7,500; owner, Anton Loeffler, 134 North Third Ave.; architect, Adolph Pfeiffer; builder, not selected.

Broadway, n e cor. Thirty-third St., eight st'y brick store, bachelors' apartments, and studios; cost, $220,000; owner, David H. McAlpin, 673 Fifth Ave.; architects, D. & J. Jardine.

COMPETITIONS.

CITY-HALL.

[At Richmond, Va.]

February 16, 1885.

Proposals are invited **until June 1st, 1885**, for furnishing designs for a city-hall upon which premiums will be paid as follows:—

For first best design, $700.

For second best design, $300.

The Committee on Grounds and Buildings of the City Council reserves the right to reject any and all designs.

For information address the undersigned.

487 W. E. CUTSHAW, City Engineer.

PROPOSALS.

WROUGHT AND CAST IRON WORK.

[At Washington, D. C.]

ENGINEER'S OFFICE, WASHINGTON MONUMENT, WASHINGTON, D. C., April 13, 1885.

Sealed proposals for furnishing and delivering wrought and cast iron work, etc., required in the interior of the Washington Monument, in this city, will be received at this office **until 12 M., on the 30th day of April, 1885**, and opened immediately thereafter in the presence of bidders.

Specifications, blanks, drawings, and any further information can be obtained at this office.

THOS. LINCOLN CASEY,
Colonel Corps of Engineers,
487 Engineer-in-Charge.

LEVEE.

[At Jeffersonville, Ind.]

U. S. ENGINEER OFFICE, CINCINNATI, O., March 17, 1885.

Sealed proposals in duplicate will be received at this office **until noon** (local time) **on Thursday, the 30th day of April, 1885**, for constructing a levee at Jeffersonville, Ind.

Approximate quantity of earth, 43,400 cubic yards.

Specifications and printed forms for proposals will be furnished on application to O. A. Clark, C. E., at Jeffersonville, Ind., or to the undersigned.

WM. E. MERRILL,
487 Lieut.-Col. of Engineers.

WATER PIPE.

[At Nashville, Tenn.]

March 25, 1885.

Sealed proposals for furnishing and delivering, f. o. b. in Nashville about four thousand tons of thirty-six inch cast-iron water pipe, will be received at this office until **4 P. M., April 27th.** Each proposal must be accompanied by a certified check for one thousand dollars as a guarantee that the successful bidder will enter into a contract within ten days from the date of notification of award. The right is reserved to reject any or all proposals, or to waive defects. *Specifications, Instructions to Bidders, Blank proposals and blank contract*, will be furnished on application.

By order of the Board of Public Works and Affairs,
OLIN H. LANDRETH,
486 Hydraulic Engineer.

HOSPITAL WARDS.

[At St. Peter, Minn.]

ST. PETER, MINN., April 4, 1885.

Sealed proposals will be received by the undersigned, Secretary of the Board of Trustees, Minnesota Hospital for Insane, **until 12 M., May 6, 1885**, for building two detached wards to first Hospital for Insane, at St. Peter, Minn., according to plans and specifications which may be seen at the office of H. E. Horton, Architect, at Rochester, Minn., and at the hospital at St. Peter.

Each bid must give the name or names and P. O. address of all parties interested in or parties to it.

Each bid must be accompanied by a certified check on some National or State Bank of the State of Minnesota, for the sum of $500, payable to the order of William Schimmel, Treasurer, to be forfeited to the State of Minnesota by any bidder who, his bid being accepted, fails to enter at once into contract for the work, otherwise to be returned to bidder.

All stone for building (except dressed stone) will be furnished at the hospital quarry, near contemplated buildings; will also furnish 250 M brick and do the excavating for basements.

The accepted bidder must give the necessary bond, with good and sufficient sureties, to be approved by the Board of Trustees, conditional on the faithful performance of the contract, in the sum of one-third the amount of contract.

Bids should be addressed to the Trustees, and marked, "Proposals for building detached wards at St. Peter."

The buildings to be completed on or before August 1, 1886, no payments to be made before August 1, 1885, and not to exceed one-half the amount of the contract to be paid before January 1, 1886.

The Trustees reserve the right to reject any or all bids not satisfactory.

A. L. SACKETT,
488 Secretary of Board of Trustees.

PLUMBING.

[At David's Island, N. Y. Harbor.]

DEPOT QUARTERMASTER'S OFFICE, DAVID'S ISLAND, N. Y. HARBOR, April 3, 1885.

Sealed proposals, in triplicate, subject to the usual conditions, will be received at this office **until 12 o'clock, noon, Monday, April 20, 1885**, at which time and place they will be opened in presence of bidders, for plumbing-work necessary to carry water from water-mains into buildings at David's Island, New York Harbor.

The Government reserves the right to reject any or all proposals.

Blanks and full information furnished on application.

GEO. H. COOK,
484 Capt. and Asst. Quartermaster.

HEATING AND VENTILATING APPARATUS.

[At Frankfort, Ky.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., April 11, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 11th day of May, 1885**, for furnishing and putting in place, complete, in the court-house, post-office, etc., building at Frankfort, Ky., a low-temperature hot-water heating-apparatus, in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $500.00, drawn to the order of the Secretary of the Treasury, as a guarantee that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered.

M. E. BELL,
487 Supervising Architect.

IRON, STONE, AND BRICK WORK OF APPROACHES.

[At Jackson, Miss.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., April 10, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 2d day of May, 1885**, for furnishing and setting in place the fence coping, gate and fence posts, street curb and brick pavement; also, furnish and fix in place all the iron fences, gates, pipe railings, gratings, etc., required for approaches to the court-house, post-office, etc., building at Jackson, Miss., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

Bids must be accompanied by a certified check for $300 for stone and brick work, and $300 for the iron-work, drawn to the order of the "Secretary of the Treasury," as a guaranty that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received *after* the time of opening will not be considered.

M. E. BELL,
487 Supervising Architect.

GRATES, MANTEL TILES, ETC.

[At Kansas City, Mo.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., April 14, 1885.

Sealed proposals will be received at this office until **2 P. M., on the 5th day of May, 1885**, for supplying and setting in place complete, all the grates, mantel tiles, etc., required for the custom-house, etc., building at Kansas City, Mo., in accordance with the drawing, specification, and schedule, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

Bids must be accompanied by a certified check for $100, drawn to the order of "The Secretary of the Treasury," as a guaranty that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered.

M. E. BELL,
486 Supervising Architect.

JAIL AND HOUSE OF CORRECTION.

[At Springfield, Mass.]

OFFICE OF THE COMMISSIONERS OF THE COUNTY OF HAMPDEN, STATE OF MASSACHUSETTS.

Sealed proposals for the erection and completion of a jail and house of correction for the County of Hampden, to be located on York Street, in the city of Springfield, Massachusetts, will be received by the undersigned, Commissioners of said County, at their office, **until Tuesday, May 12, 1885.**

Plans and specifications can be seen at the office of D. H. & A. B. Tower, Architects, at Holyoke, Mass., on and after Thursday, April 16, 1885.

The builders to whom the contract shall be awarded will be required to enter into bonds, with at least two approved sureties, for the sum of $35,000, for the faithful performance of the contract.

Bidders will be required to send certified check for the sum of $500 with proposals.

Work to be commenced within 20 days of awarding of contract, and to be finished on or before the 15th day of November, 1886.

The right reserved to the Commissioners to reject any or all bids.

LEONARD CLARK, HENRY A. CHASE, L. F. ROOT, } Commissioners of the County of Hampden.
488